

DESTABILIZING SPECULATION IN MINING COMPANY IPO'S:
AN ANALYSIS OF TRADING IN SHARES SURROUNDING
ASSAY RESULT ANNOUNCEMENTS

by

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Abstract

The traditional view of the role of speculation is to influence a company's share price to move in the direction of fundamental value in the face of new information. However, newly formed mining companies provide a superior position to company insiders with respect to information. Insiders upon the receipt of new information may find it advantageous to initially destabilize prices away from fundamentals. If they are able to take advantage of the investing public who can be characterized as positive feedback traders (PFT), who buy when prices rise and sell when prices decrease; they will be able to increase their returns at the expense of the positive feedback traders.

When mining companies are first taken public, they are largely owned by a small number of insiders whose welfare is closely tied together. It is argued that insiders use the period surrounding the release of assay results to the public to transfer ownership of the company to the public by taking advantage of the public's positive feedback trading characteristics.

Investigation of mining company initial public offerings (IPO's) proceeds in two steps. First, the interrelationships between the market participants involved in the buying and selling of shares are outlined. Then a model is used in showing how these relationships provide insiders the opportunity to exploit investors. Specific predictions are made by the model with respect to the trading in shares around the assay results release. These predictions are built into an empirical model and tested on the trading of shares around 63 reported assays from

1988 to 1990. Results from the test support the hypothesis that positive feedback trading characteristics exist and that these investors typically pay too much for these shares.

Dedication

For Family and Friends

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In thanking the many people who have been of tremendous help in writing this paper, I have decided to break it down into sections.

In developing the structure and theory involved in the paper as well as it's writing, I thank Dr. George Blazenko and Dr. Geoff Poitras. Any faults in the paper are likely associated with the author and his unwillingness to bend at times.

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Introduction

The Vancouver Stock Exchange has been the focus of media attention several times in the last couple years. In particular, several investigative reports focused on possible fraudulent practices on the part of local market participants. In response to public concern arising from these reports, the Government of B.C. has organized an inquiry to make recommendations for changes to exchange policy directed at controlling abuses of investors and improving the exchanges reputation.

However, certain unique features of these companies and the investors who buy these shares will likely limit the ability of regulators attempting to satisfy the concerns of all interested parties. Two key problems highlight the issue. First, with little or no economic history; it is very difficult to value these companies. Secondly, investors can often be their own worst enemy. By often investing on rumor and getting caught in the speculative frenzy that can be associated with these companies, they appear to pay too much for there shares. The problem is further complicated due to the asymmetry of information between company insiders and the investing public.

When companies are first taken public, the entrepreneur, underwriters and directors are put in a privileged position. They have access to confidential company information. To varying extents, they can control what is released, when it is released and in what form it will be released. Often the interests of the company, company insiders and the

investing public will contradict with respect to the release of such information.

It is widely held among academics that if superior information is acquired by an investor that they will quickly capitalize on it by buying or selling shares in the affected company. This will result in share prices that quickly and accurately reflect all pertinent information. With the introduction of these contradictory interests with respect to information; speculative forces may not act in the manner commonly ascribed by economists.

Recent papers, most notably the paper of DeLong, Shleiffer, Summers and Waldman (1990) have questioned the role of speculation in financial markets. The authors suggest that in the presence of superior information, that informed investors may attempt to take advantage of uninformed traders by initially destabilizing prices. The authors suggest that less informed investors may chase the trend in share prices initiated by insiders. This allows insiders to extract large rents from the less informed investors resulting from their naivete and inferior information.

The focus of this paper is on the trading of mining company IPO shares around the release of assay results reporting mineral concentrations of the company's property being prospected. In the first chapter of the paper, the process of organizing and taking a mining company public is discussed. Chapter two outlines the difficulties involved in valuing a mining company. Chapter three characterizes the types of investors who purchase these shares. Here it is outlined how investors attracted to these types of investments are susceptible to the hoopla and excitement that can be associated with a mining company play. Chapter four begins tying the paper together outlining some of the

promotional techniques that are often involved in raising the venture capital necessary to finance a company. It also outlines some of the less desirable tactics and shows just how superior the position of company insiders is relative to the investing public. Chapter five formalizes the argument with the use of a model. The model makes specific predictions about the trading of shares around the assay result and how the share price is likely to react.

Chapter 1

Building a Mining Company

To some extent every man and woman dreams of hitting the big one. The most obvious example being the enormous popularity of lottery tickets. But undoubtedly, the oldest form of such dreams lies in the acquisition of gold. The California and Klondike gold rushes indirectly resulted in the development of two nations. Until 1973, the gold standard stood behind the U.S. dollar, guaranteeing its value to the world. Today this precious metal remains a popular ornamental gift and is widely viewed as a good hedge against inflation. The price of gold is quoted regularly by television and newspaper reporters who use it as an indicator of the state of the economy along with the TSE index and the Bank of Canada rate. To supply the world's demand for gold and other precious metals, mining companies comb the world searching for the next big find. In Canada, "Gold Fever" is still very alive as can be witnessed by the large number of gold mining companies listed on our stock exchanges. Behind every one of those companies lies prospectors and geologists out in the field searching for the next major find.

In North America there are very few areas of land which have not been examined by infrared or satellite photography. As a result, those areas that remain are primarily higher cost regions where the probability of finding a site with geological merit is very low. Quoting Lassonde (1990, P.116), "it is estimated that less than one in a hundred junior mining companies finds gold, while no more than one in two hundred

finds gold worth mining". Mr. Lassonde goes on to quote a study by the North American Securities Administrators which suggests that penny stock buyers lose some or all of their investment in 70 percent of legitimate offerings. This figure rises to 90 percent when fraudulent schemes are included (P.116). These statements exemplify how difficult it can be to succeed in the mining game as a company or investor. This leads one to ask why investors and prospectors continue? At this stage of the paper it will only be suggested that it is due in part to the allure of gold and dreams of windfall gains.

The amount of work that goes into, and the expertise needed at each stage of the development of a mine is vast. One possible exploration program in search of a variety of possible minerals, would proceed as follows. At the initial stage of prospecting it is common to perform a simple chip and grab sample on the surface of a site. Assuming the prospector is impressed by surface characteristics, then using statistical formulae to determine the sampling procedure samples are gathered and shipped to a lab for analysis. Based on these results a decision will be made about possible diamond drilling. This involves a core sample of soil being taken from the ground several hundred feet below and shipped to the lab. If favorable results are obtained at this stage a further decision will have to be made about building a mine. J.P. Franzen outlines the elaborate process involved in developing a mine including five key factors that will have to be considered before building a mine:

1. What are the ore reserves and grades
2. What mining method will be used.
3. What will be the associated capital and operating costs.
4. Forecasts of metal prices
5. How does the mine fit in with corporate objectives.(P.164)

The costs of development at each stage can be staggering. Diamond drilling can cost between \$15 and \$30 per foot, and the cost of moving ore from the mine site can range from \$10 to \$80 per tonne. With expenditures of these magnitudes being incurred constantly and very poor chances of success, it is easy to see why so many junior mining companies fail. They simply run out of money. Even if the prospectors and geologists involved are highly skilled; prospecting is not a perfect science, so it is better to be lucky than good.

Having found what they believe to be a viable property, the prospector will now face the problem of finding the financing necessary for further exploration and development. A recent article in the Globe and Mail highlights just how difficult the problem of raising funds can be. Denis Richards a mechanical engineer and the developer of a multi-award winning paving technology is quoted saying, "I'll run naked down the street to get the 1.5 million" [needed to develop his project], ... I don't know how to look for money ... How do you find these people "(Mahood 1993, P.B1). Raising venture capital is a skill very few people have and if a project is to be developed the money will have to be raised. For a prospector trying to develop a mine site, there are basically only two feasible options. One is to sell the right to develop the property to an established mining company. This has the advantage of providing a certain payment; but if the mine truly has potential there will be limits on his or her share of the find as agreed to in the sale of the property. The second option is to find private backing from investors in return for a share of the profits.

This second category can be further subdivided into two sub-categories based on the source of private financing. One source of funds

is the use of private financing. This method would use the resources of perhaps 5 or fewer individuals (or possibly a venture capital firm) who can afford to tie their cash up for perhaps 5 years (the period it takes to generate positive cash flows from most mines) without a significant return. There are advantages to this form of financing such as no public disclosure, no filing requirements and avoidance of the various costs associated with being listed. The problem for the prospector is in finding the best deal. Since their capital will be locked in for a long period, venture capitalists will demand a major role in all decisions and a relatively high return on investment.

If the prospector wishes to remain in control of the company, he or she may find it advantageous to form a publicly held company. In order to do so, the prospector will likely need help from someone with the necessary knowledge, contacts and drive needed to take the company public. In venture capital markets this individual is referred to as the promoter. In the genre of books and newspaper articles currently written, the promoter is often viewed as a liar and thief; trying to sell worthless pieces of paper before escaping into the night. But to achieve success, there must be someone telling the world about this great company and its prospects, and this is the promoters key responsibility. A promoter will ultimately be behind the companies success. In the jargon of sales, "nothing happens until a sale is made". For a venture firm, the promoters key responsibility is to "make a sale". This translates into raising the money necessary to start operations and to continue to do so once operations begin.

The promoter will assist in designing a business plan and develop a promotional campaign to raise sufficient capital from private sources

necessary for conducting the initial exploration. By searching out known venture capital firms and wealthy individuals or possibly simply knowing how to get Government grants the promoter will find the funds needed to start operations. Once the company is ready to go public, the promoter will aid in the underwriting and insure that all listing requirements are met. Then working with the underwriting firm's corporate finance and marketing departments will assist in selling shares to the public using the facilities of the stock exchange.

Taking the company public provides value to both investors and the company itself. With no possibility of selling shares through an exchange, a venture capitalist is locked in for the long term and risks losing a substantial portion of invested capital without an escape hatch. A shareholder of a listed company who no longer sees potential in his or her investment may sell the share through the facilities of the stock exchange. The resulting risk (and liquidity) premium that is attached to an investment in a mining company is therefore much lower for a publicly traded company. As a result, investors gain since they can change their minds and the company gains since investors will find these investments more desirable.

The timing of cash flows is particularly important for the valuation of mining companies. Unlike an industrial firm, a mining company will likely not be profitable for at least 5 years from inception. The first two years being spent on exploration, another two years developing the mine and another couple of years paying off accumulated debts (Lassonde 1990, P.115). The discount rate associated with the projected cash flows is thus greatly reduced by allowing investors a way to cut their losses should their evaluation of the companies prospects change. Finance

theory suggests that the firm's value is the discounted value of its future cash flows. By lowering the risk premium attached to investment, shareholder wealth is increased. This is particularly significant in the case of mining companies where the cash flows are far off into the future.

The potential for a liquid and active secondary market for a firm's shares also makes raising start-up (commonly called "seed") capital easier. The seed capitalists will be more willing to invest if they know that a liquid secondary market for their shares will exist. The ability to attract such capital is vital since it is their investment which goes to finance the initial exploration and development of the proposed mine site. Subsequent trading in the secondary market of these shares will result in capital gains or losses for investors, but none of the money invested will accrue to the company's treasury.

This does not imply that a mining company's directors are unconcerned about trading in the secondary market. Normally they have a large investment in the company's shares (which may or may not be held in escrow). This works to the investors' advantage since the directors' welfare is tied into the company's share price. In the development of all junior mining companies several cash injections will be needed for each stage of exploration and development. With a high share price and a "healthy" secondary market, fewer shares will have to be sold in any subsequent offerings. This will have the effect of minimizing the dilution of existing shareholder wealth and increase the probability of a successful sale of the secondary offering.

From the viewpoint of generating equitable returns, it was pointed out by a local broker that early stage investors deserve a greater return on their investment since they have taken a greater risk by investing

when the company's probability of failure was much higher. Therefore, the promoter involved should be encouraged to attempt to have each successive share offering at a higher price as the risk involved in the project falls. As a result, early stage investors are rewarded for staying with the company.

Once a prospector takes a viable property to a promoter, the process of exploration begins. This can best be characterized as try, try, try and try again. Money is raised from seed capitalists to form the company and do the initial exploration. If things look positive, the company may seek public financing, which implies giving up a stake in the company in return for the necessary capital. A series of exploratory drills will be conducted. This requires money to pay the drillers, labs, lawyers, etc. As the company runs low on money, further injections of capital raised through secondary offerings or private placements will be needed.

Since the majority of these sites can only be reached 4 to 6 months of the year, exploration takes place on a seasonal basis. The company will have to organize and finance exploration crews, getting men and equipment to remote areas if necessary in this short time frame. Once at the site they will begin drilling under the geologists directions, drilling for samples that will be shipped back to the lab for analysis. It is the promoters responsibility to insure that the company has sufficient capital for each play. During this period investors are buying and selling shares, speculating on the companies potentials at the latest site. In the end, the company will either have hit it big or lose favor in the eyes of investors. Unable to raise cash, the company will fall into the ranks of "shells" waiting for a possible reverse takeover.

All of the participants need each other; prospectors need promoters and underwriters to set up the company. Promoters need seed capitalists to finance the early development and meet listing requirements, while secondary market participants speculate on the potentials of this newly formed company. In the process they purchase shares from early stage investors who wish to lower their holdings over time or are simply take profits; looking for new venture capital investments having seen this project through it's early stages and look for a new venture company to get involved with.

There are basically three groups who are involved in the buying and selling of junior mining company shares. The "informed insider group" consists of key company personal, underwriters and the promotion group. Distinguishing features of this group include access to important information, the holding of a large proportion of company shares (particularly when the company is first formed), knowledge about the composition of shareholders and the ability to promote the stock.

The second group consists of the "uninformed investing public". This group of investors are characterized later in the paper as being similar in many ways to lottery ticket buyers. It appears that in general they are not aware of the odds of companies they invest in achieving success, nor the possible affects of the use of stock manipulation techniques. The third group can be deemed the "outside market participants". This group consists of outside market professionals and the regulatory authorities. These two seemingly unrelated market participants are grouped together since their presence places a limit on the extent to which exploitation of naive investors can take place (as will be outlined later in the paper). Regulatory authorities do so through

monitoring companies trading activities, with the threat of halting trading in company shares. Outside market professionals act as the traditional market speculators. They know the markets, should a share price move too far out of line with what they believe to be reasonable, they will attempt to profit by taking an opposing position.

Chapter 2

The Valuation of Junior Mining Companies and Investment Strategies

In valuing an initial public offering (IPO) on a senior exchange, investors have the advantage of being able to inspect several years of financial statements. For instance, the Toronto Stock Exchange, requires five years of operating income statements to be eligible for listing. Most junior mining companies on the VSE, having just been formed have little financial history to examine. Prospectuses submitted as part of the listing requirements often require a degree in geology in order to interpret and are primarily written up by the companies with the sole purpose of meeting regulatory requirements. Quoting Lassonde (1990, P.95), "for most investors, private as well as institutional, weighing the value of gold shares is seen as a nebulous mix of finance and engineering that's closer to alchemy than financial analysis". This is supported by the views of several market participants who suggested that few investors bother examining the details of a prospective investment beyond finding out who is promoting the deal, where the proposed properties are located and how the financing is being raised. If the story sounds interesting; with a chance for the company to make it big and large investors backing the deal then a speculative investment is attractive.

The belief that fundamentals are of lesser importance in the determination of a VSE listed company's share price is supported by recent testimony of Keith Neumeyer at the B.C. Government inquiry into the VSE headed by James Matkin. Mr. Neumeyer testified that share price of the proposed offer to take his company public was of primary

concern to the Vancouver brokerage community. Where as TSE personnel were more concerned with profitability and other company related factors that may insure success of the share offering (Lush 1993, P.B1). It can be suggested that a shares value appears to be measured by investors in small speculative issues relative to similar issues. The extent of prior exploration, development or the company's financial situation is of minor importance. From the promoters perspective, investors must be convinced that they are getting a fair deal (regardless of whether they are or not). A large proportion of the local brokerage community seems very aware that share price is vital to investors in the determination of a shares value and therefore place a lot of emphasis on the price regardless of fundamentals when selling the company's shares to investors.

From a fundamentalist perspective, the valuation of a junior mining company involves an examination of the firm's potential reserves and the cost of developing those reserves in comparison to the expected price of the commodities once mined. Investors are largely reliant upon the assessment of analysts interpretations of assay results and other information provided by the company. For all mining companies listed on all exchanges, "reports on possible reserves are shadowed by the geological interpretation made by the mining companies management" (Lassonde 1990, P.92). Calculating the cost of producing gold is very complicated, dependent upon the specifics of the particular mine. But in 1988 it was estimated to be about \$265 U.S. per ounce in North America (Lassonde 1990, P.101).

To estimate the cost of production for a particular firm, investors must estimate the costs of exploration, development, ore removal, transport, crushing, water pumping and environmental reclamation

amongst others. Since most of these mines will not become profitable (if at all) for perhaps five years, investors will need to see into the future to predict mineral prices and operating expenditures. Then they will have to come up with an estimate of the size of reserves this mine contains. After accounting for outstanding debts then investors can examine the value of a particular share of the companies stock.

A popular method used in finance for the valuation of firms is the discounted cash flow model. Estimation of future cash flows into the foreseeable future are made. These forecasts will be tenuous at best and are further complicated through the life of the mine. Taxation laws are changed, reclamation costs are incurred and operating costs of the mine will have to be evaluated on a ongoing basis. Once cash flows have been estimated, a discount rate will have to be determined in order to derive the present value of those cash flows.

Finance theory would suggest the use of the Capital Asset Pricing Model (C.A.P.M.) in estimating a discount rate for the evaluation of future cash flows. However, the use of this model in calculating the discount rate can pose serious problems for valuing junior mining companies. Campbell (1980) in analyzing 27 mining companies over the period 1964 to 1972 estimated Beta coefficients to range between -1.22 and +3.03 (Campbell 1980, P.18).

This would make comparison to a junior mining company IPO tenuous. The problem is magnified when the resulting discount rate is used to discount cash flows that begin in five years and continue for another eight years perhaps. With cash flows to be received so far into the future, a change in the discount rate of even a small amount can result in a large change in present value estimates. The C.A.P.M. (or index models

based on the C.A.P.M.) is not robust enough to use in estimating the value of a junior mining company. Investors are forced to look to other methods of fundamental valuation.

One method would assume that markets are relatively efficient. If the junior mining company is opening a mine in an area where established mines are currently operating, then an imputed cost of developing and mining reserves in that area can be derived from the existing companies financial statements and share price. In a similar manner, it can be proposed that the markets expectation of future mineral prices will also have been factored into the share price. The remaining element to be determined in valuing the IPO is to estimate the size and quality of reserves. Unfortunately, until the mine has been in operation for several years the potential size of the reserves are constantly being reevaluated.

In the early stages of a junior mining companies development, analysts and investors will rely on one key piece of evidence in establishing the nature of a mines reserves, the assay result. Drilling conducted during the exploration and development stages will produce samples of ore from the site. These samples are then shipped to independent labs for analysis. Depending upon how busy the lab is, the analysis will take approximately three to six weeks. At that time, a report is returned to the company's directors detailing precise estimates of the concentrations of various minerals found in the sample. Timely disclosure requirements enforced by security regulators force company directors to make a press release of pertinent findings of the assay result. This information can then be used by investors to estimate potential reserves and thus make an assessment of the company's fair value. The

problem for investors is that enforcement of the disclosure requirement is largely left up to the VSE, who rely in part on the company.

It was suggested by several market participants that press releases were often issued after the fact. For example, suppose a company's share price rises unexpectedly with no apparent change in the company's value. Normally, the VSE's market surveillance department responds by contacting the company's directors. If they are not satisfied with the response, they may halt all trading in the company's shares. Not wanting to cause any uncertainty amongst current or potential investors and to avoid regulatory examination of the company's affairs, the company will make a press release.

An investment strategy that appears well suited for the purchase of junior mining company IPO's listed on the VSE is that of John Kaiser's, a highly regarded local broker. In his analysis of "longshots", Mr. Kaiser aims at selecting stocks (resource and non-resource based) priced at under one dollar with the potential for vast appreciation. The key being to pick companies that are not currently popular amongst speculators, but show the potential of becoming so. Investors are directed to accumulate stock in these companies waiting for the day when the company takes off. The merits of the company are secondary, "...when you are betting on longshots, you are speculating on speculation, not on success". (Kaiser, 1990)

Mr. Kaiser has a five point method for selecting longshots based on each company's background, structure, people, story and capital structure. Analyzing a company's background focuses on its origin and history. Structure involves investigating the share structure; who owns what and how much. Ideally, there will be an inside group with a large

share holding who will profit substantially from a price increase. He draws an analogy between the life of a speculative stock and the physical states of water; solid, liquid and gas. The structure initially solidifies as insiders acquire large positions. Then a melting phase occurs as some shares are sold and the story begins. Finally, evaporation takes place as the story is brought to boil and the shares are dispersed in all directions. The majority of shares are then held by outsiders and the story has either succeeded or failed.

The people section focuses on the insiders and their track record. Their importance in the selection of longshots is crucial "A company with all the pieces in place except good people is not going to go anywhere, either as a speculative market play or a fundamental success story".(Kaiser, 1990). The capital section examines the company's financial situation. Ideally the firm will be adequately funded, but in need of funds for future development. Insiders, wanting to minimize dilution of their shares will attempt to raise funds at successively higher share prices.

The story section (as Mr. Kaiser defines it) follows the evolution of the company's share price. Correlation between success of the company and the rise or fall of it's share price is not always high. Speculators buy shares on the basis of promoters prophecies. "The result is that prices often leap far ahead of the realities.....Lurking in the back of every speculators mind is the expectation that even greater optimists will be attracted to this stock". (Kaiser, 1990). The focus of an investors analysis is on predicting how high market expectations of the company's share price will become.

Using a very large database, Mr. Kaiser searches for companies that satisfy certain criteria in all five areas, investing accordingly. Interesting points of his method include the importance of having a talented insider group positioned to profit from a rise in share price. As well, it is important to have a concept that will attract other speculators to purchase shares from you at higher prices in the future.

Press releases revealing potential mining discoveries provide important information with regards to the markets valuation of a junior mining companies share price. Market participants will attempt to buy and sell shares as soon as possible after receiving the press release so as to capitalize on changes in share price. Speculation around the release of an assay result can become particularly strong when accompanied with promotion.

Directors of the company know that the companies shares will be at the height of public interest during this period. They will also likely have a good estimate of the results to be expected from the lab. Experienced diamond drillers who take the sample cores will be able to inspect the sample core before it is shipped to the lab. Years of experience enable these drillers to make fairly accurate predictions of the coming lab results. The directors therefore have a two month period around the release of an assay result in which to announce that the core is being shipped to the lab then make the announcement of the results. Combined with early estimates of lab results provides company insiders with a very advantageous position.

The potential exists for directors to control how information concerning the assay result is disseminated in order to maximize their own welfare. They must be conscious of regulatory scrutiny; but more

importantly, they will attempt to assure investors that they have been given a fair shake. The opportunity to raise further capital by selling shares in the future for this company and others is a very important consideration for promoters.

Empirical results discussed in chapter 6 show that on average the share price on these companies rises quickly approximately 17 days before the release of the assay result. This rapid increase in price is then followed by a period of relative stability leading up to the release of the assay. At this time the market assesses the results of the assay and the share price typically returns to the price which existed prior to the announcement of the coming assay result.

It is suggested that promotion around the assay result is used to distribute shares from the inside group to the investing public during the height of speculation. As a result, the investing public will tend to pay too much for shares during this period. The inside group benefits at the expense of naive investors who get caught up in the speculative buying spree.

Chapter 3

Investors

Previously, investors were characterized as belonging to one of three groups; informed insiders, outside market participants and the investing public. In this chapter, key characteristics of these groups will be outlined which will be used to support the thesis of this paper. Strong claims have been and will be made about the way insiders are able to exploit uninformed traders. In arguing that informed traders take advantage of the uninformed, it is implicitly assumed that the uninformed do not learn from their mistakes. Explanations will be proposed to help explain this phenomena and to explain why other market participants do not enter to share in this easy money.

In suggesting that public investors do poorly when investing in junior resource mining companies, reference is made to the work of Brown Farris and Jefferson (1979). The authors conducted an extensive study of the junior resource mining industry over the period 1965 to 1977. In general, they found that the odds of losing money when investing in these companies [using a buy and hold strategy], were about five times out of six. Furthermore, the current value of the public's outlay [the total amount invested over the years compared to its value in 1978] represents a loss of 57.8%". (Brown et al. 1979, P.42). Similar results (over a much shorter period) were found for the 63 companies in this study. With such poor chances of success, it remains questionable as to why the public continues to invest in such companies.

In examining why investors do not seem to learn from past mistakes we can examine two Government of Canada supported studies

from the 1960's. In the first, a Royal Commission was set up in 1964 to investigate the Windfall Oil and Mines Ltd. scandal. The investigation focused on the collapse of the companies share price leaving investors wiped out. The Commission focused on small investors; in one instance asking investors what type of investment did they believe they had made. In response, 56 percent stated that they considered it a gamble, while 36 percent considered their money safe for a short term with the possibility of a quick capital gain. As many as 69 percent stated they were very likely going to trade in speculative securities again. (Kalymon 1978, P.233). Kalymon characterizes such investors as being similar to lottery ticket buyers, "our analysis of the speculator in junior mining stocks suggests that his motivation would make him more comparable to the participant in lotteries than the classical investor seeking to minimize risk" (Freyman 1979, P.11).

Kalymon in summarizing the findings of the Royal Commission on Banking and Finance in 1963 concluded that the average investor in speculative securities at that time was on average in a higher socioeconomic group and committed only a small portion of their wealth to speculative securities.(Kalymon 1978, P.230) In general, these studies characterize investors in junior mining companies as risk loving. They can afford the loss and are willing to take the risks in return for the opportunity to hit the big one.

It can be suggested that naiveté on the part of investors is still common on the VSE. Currently diamond mines are at the heart of speculation on the street. In Chans Overview (an internal publication of L.O.M. Western dated June 8, 1992), the author describes how investors in diamond stocks will get caught up in a speculative frenzy; "... at the

outset, seemingly overpriced issues will spiral higher and higher, then a multitude of newcomers come out of nowhere, ... In the end, ..., a lot of paper debris will litter the accounts of the foolish,...". This market expert accepts that prices are being bid up above fundamentals; but sees a chance for investors to make money at the expense of the uninformed.

Adrian du Plessis a former floor trader on the VSE takes a stronger view of promoters and the manner in which the public is treated. "When it comes to flesh and blood, Howe Street's [the former location of the VSE] well organized promotional teams target ever different investors, in varying geographic locations, and the smarter 'touts' ensure that each individual is stung for an amount that makes time-consuming and expensive legal action to recover losses hardly worthwhile".(duPlessis 1988, P.25). It can be suggested that promoters who set up companies to fleece investors search out those individuals who won't make waves. The current study, which focuses on junior mining companies should face minimal problems of such exploitation due to the greater regulatory involvement in the mining sector.

DeLong, Shleiffer, Summers and Waldman (1990) suggest three reasons why traders may repetitively make the same mistakes. First every episode (mining company play) may look different. The promoters involved will be assuring investors of this. Brown, Farris and Jefferson cite ignorance of the odds of success as being a key reason why investors continue to purchase these shares. A study measuring expected returns for investors in junior mining companies had not been completed at that time (they went on to state that investors lose money five times out of six). As such the authors suggest, "ignorance of the returns is a factor to

the public because it is possible to hold out the promise of returns more easily than if such factors were known ...". (Brown et al. 1979, P.9)

Secondly, traders after experiencing a serious loss may save and return to the market later. Their latest loss being viewed as an aberration that will not happen again. If the findings of both Royal Commissions are accepted, then it can be suggested that investors are wealthy enough to take a substantial loss without facing financial ruin. Such investors apparently enjoy the thrill of investing in speculative securities and are willing to accept such losses as part of playing the game. Thirdly, "if traders mistakes cause them to take positions that carry more market risk than rational investors, they can earn higher returns in the market even if they make judgment errors".(DeLong et al. 1990, P.383). For example, a risk adjusted rate of return required for a junior mining company might be well over 20 percent. Yet investors would be happy earning a rate exceeding that of bank deposits, given the opportunity for a large enough gain. In fact, in only 275 of 3,411 (8.1%) of financing's over the period 1965 to 1977 in the BFJ study were firms able to achieve a 20 percent rate of return over a four year period.(Brown et al. 1979, P51)

When scandals have rocked the VSE in the past, one broker interviewed suggested member firms largely follow the "ostrich philosophy". As long as commissions were being generated, they kept their heads buried in the sand. If a scandal became public, interference would be run with regulators, time would pass and eventually, the public would return to the market. Quoting du Plessis, "indeed it is more common for official steps taken, almost unavoidably in the wake of gross, publicized, violations to contribute to the publics false sense of

confidence in regulatory protection".(du Plessis 1988, P.). The net effect is that investors believe that regulatory bodies exist to monitor trading in the shares of companies listed on the VSE and therefore they are well protected from illicit practices.

Academic research has focused largely on mean and variance in the investor decision problem. This resulted largely from some of the early work of Eugene Fama which concluded that any moments beyond the first two were so small in magnitude as to be negligible. Fama's research which focused on relatively larger companies found share prices to be approximately normally distributed (Fama, 1976). In contrast, Kalymon found rates of return of small mining company share prices to be highly skewed; particularly in the one to four week periods. This places the use of traditional portfolio theory in valuing mining companies in question. If skewness is of a larger magnitude in junior mining companies, it may be of value to investors.

An interesting model is developed by Kalymon (1978) for valuing investor utility from such investments. The author designed a model using a utility function dependent upon the first three moments of share price returns. In a simple example using two investors the author shows that an investment with a negative expected return can have a positive certainty equivalent valuation for these investors. Although investments in a mining company may seem unwise on an expected return basis, investors who desire skewness in returns are likely to seek them out. The reward offered in return for a given level of risk will not have to be as high as otherwise if investors are offered a return distribution which is positively skewed.

The desirability of including skewness in models of consumer utility functions comes from the belief that investors exhibit decreasing absolute risk aversion. (see Kraus and Litzenberger 1976). That is, as wealth increases investors are believed to become less risk averse, a proposition that is generally accepted by observation. At a more basic level, it can be suggested that if you are going to invest in assets with a high probability of failure, why not invest in those assets which are highly positively skewed?. Such a proposition is along the lines of Kalymon (1978) who views investment in junior mining companies to be comparable to the purchase of lottery tickets.

The psychology of investors can also be examined in explaining why investors do not seem to learn from the past. Variable-ratio reinforcement has been shown to be the most effective form of inducing behavior patterns. This can be seen most commonly in compulsive gamblers who will stand at slot machines endlessly. Such a schedule of reinforcement involves rewarding the subject after a variable number of the desired action have been performed. "The chronic gambler who is exposed to a variable-ratio reinforcement schedule, literally cannot quit. The occasional and unpredictable reinforcement is to the delight and profit of the casinos - enough to keep the gambler going through very long stretches without any reinforcement. In a similar vane, an investor in a mining company is waiting for that big one to come in. Since the wins and losses are coming in different magnitudes and at different times the investor is essentially being conditioned by a variable ratio reinforcement schedule. Over time the investor becomes more conditioned and less objective in assessing the nature of the investment.

One of the key attractions of junior mining company's for investors appears to lie in the possibility of large returns. But if an investment is not diligently researched beforehand, investors may be throwing their money away. Both Kaiser (1990) and Bubbis (1980), propose investing at the early stages of a market play and then selling at the height of demand. Quoting Kaiser, "...when you are betting on long shots, you are speculating on speculation." Furthermore, if you decide to follow the company till the end, " you had better assess the story's fundamentals very carefully." Bubbis characterizes his strategy as one of buying merchandise. He researches companies carefully, looking for those that will be in high demand in the future. Price is secondary; the key is to pick the proper vehicle. Both Kaiser and Bubbis accept the possibility of a company they invest in going broke. They look for those companies for which a speculative play is likely to develop; both noting that a company can have outstanding fundamentals and go nowhere. In effect, these authors search out those companies which they believe will have a highly positively skewed return distribution.

The question that remains, is why don't other market participants enter to share in the "easy money"?. There are a number of possible explanations for this. If it is believed that the use of box accounts and illegal stock manipulation practices are prevalent on the VSE, then the answer is readily apparent. If your not inside - your outside, and outsiders do not know if or when insiders may desert the company leaving them and the public holding worthless paper.

It might be believed that there is not blatant manipulation; but only a relative shift in risk bearing to the investing public through the use of promotion to coerce the public to buy overpriced shares. Then,

uncertainty exists for market participants who have little access to fundamental information about the company or the direction of its share price. It appears to be widely held that fundamentals have little to do with the share price at a given time. In the words of one broker commenting on junior mining resource companies, "when a company is spending money, that is when the stock moves up or down.... when they run out of money it goes down, unless they found something spectacular, then it goes up." Such uncertainty about the factors which affect share prices would impede offsetting positions from being established by outside market participants.

It can be argued that the existence of outside market professionals (and securities regulators) place upper bounds on the movement of a share price. If a promotion scheme manages to push share prices up too high and/or too fast, it is likely that outside market professionals will enter shorting the company's securities. A professionally managed box account will attempt to limit such short selling by monitoring shareholder lists, and perhaps they try to limit short sales on those shares held in the box. Regulators also help impose an upper bound by following all companies and inspecting any irregular price moves. Insiders, combining promotion with the use of a box account may be able to convince naive public investors that this company's shares are "taking off". But at some point, the regulators and market professionals will enter forming a credible threat and thus an upper bound to share price movements.

There is also the question of what would be the optimal strategy to employ to maximize insiders profits; given the ability to influence prices. The best strategy is likely not to drive the share price through the roof

quickly only to have it collapse and the company disappear. A promoting group will not last long following such a strategy. It leads to disgruntled investors who come down on their brokers, who in turn will learn to avoid this promoter in the future. Instead, it is argued that the promotion group uses key events during the life of the company, such as the release of assay results accompanied with promotion to sell shares at prices above what might be deemed "fundamentally based". As a result, the inside group holding the shares receives a high rate of return, while the investing public earns a lower rate of return.

Over the life of a mining company (whether it finds a viable mine or not) many speculative plays will develop in the company's shares. This allows the inside group to transfer ownership of the company over time (and associated risks); while enjoying high rates of return. As long as the public is willing to ignore expected rates of return, this allows junior mining companies to finance their activities cheaply, while providing a high and relatively safe rate of return for the inside group.

Chapter 4

Promotion

Once the decision has been made to use public sources of financing, a number of different groups become involved in taking the company public. The entrepreneur will rely upon help from underwriters, lawyers, brokers and financiers. Normally a promotion firm will be hired, or a promoter added as a director of the firm. The role of promotion in relation to starting a junior mining company is to orchestrate the development of the company. The primary responsibility is one of telling the world of the merits of this newly formed company and raising capital for its development. The promoter will also be responsible for coordinating the operations of the underwriting and marketing aspects of the firm. Even a bare-bones exploration program can be expensive. In order to raise the necessary funds, the promoter will have to convince prospective investors on the merits of this company. Quoting Silver (1985, P.33), "selling a concept deal requires as much promotion as tickets to the World's Largest Alligator at the State Fair".

If only one in two hundred junior mining companies find gold worth mining, the prospects for a given mining company can be said to be abysmal. Yet promoters have obviously been successful in the past in raising the necessary funds to start mining companies and keep them going. The number of mining companies currently listed on Canada's stock exchanges attests to that. Two reasons can be proposed to explain promoters success in raising seed capital. One, they are good salesmen, and are able to convince investors (both seed capitalists and the general

public) to overlook the odds. Secondly, it is suggested that the risks for seed capitalists in these deals are not reflective of the one in two hundred chances of finding gold. Instead, it is argued that the investing public pays too much for shares purchased from seed capitalists. The resulting wealth transfer has the effect of increasing the returns for seed capitalists, while lowering returns for the general public.

The promoter will be responsible for assuring seed capitalist who provided the capital necessary to satisfy initial expenditure requirements (\$75,000 to have been spent developing the proposed property) that their investment is safe and profitable. Legal council will be kept busy insuring that the various filing requirements outlined by the B.C. Securities Act and Securities Regulation are satisfied. There will often be a series of "dog and pony" shows, where a marketing team is sent to the major brokerage houses attempting to raise interest in the company.

Depending upon the type of listing procedure being used, a preliminary prospectus will have to be submitted to both the V.S.E. and B.C. Securities Commission. In part the process of becoming listed seems to have evolved in an attempt to create an environment too costly for fly by night artists. Experts from the V.S.E. and Securities Commission will examine all documentation and if necessary consult experts from the field on the feasibility of the business. By lengthening the process over several months, this gives all potentially interested parties an opportunity to inspect and question the operations of the company.

Contacts are vital for a promoter taking a company public. A reputation, once established is a promoters most valuable asset. A prospector who walks in off the street into an underwriters office to raise funds will be received very hesitantly. Presumably, he or she will present

some form of geological report on the property and provide background on themselves and their previous experience. The local financial community is likely going to be unreceptive to such individuals. A lot of such claims can not be verified or necessitate a lot of time and money in order to investigate. A promoter who takes on an entrepreneur is staking his reputation on this client. If the client turns out to be a fraud, leading to financial and/or reputational losses for the promoters associates, the word will get through the street quickly about this promoter.

Valuation is extremely difficult, these are high risk venture firms. When the decision is made to start such a firm, one has to accept the possibility of failure. The investing community will examine venture deals by comparison to similar ventures in the past. Judgments will be made about the potentials of the firm and investors willingness to invest in such deals. The decision will then be made whether or not it is in their best interest to get involved. Failure of a company is part of doing business, taking large financial losses is not.

Participants in the early stages of a venture companies development face large risks. In return they should receive a level of return commensurate with the risk involved. If secondary market investors underestimate the risks involved in purchasing the shares, they end up paying too much for those shares. It is suggested that the promoter is able to link his past success and salesmanship to the company, as a result secondary market participants may underestimate the associated risks. In the end, seed capitalists receive a high rate of return for the level of risk involved, while secondary market participants receive a relatively low return. Promotion of the firm is vital in the

development of the company, but also becomes very important for investors.

Essentially every individual involved in the development of the company is a promoter. In one form or another the prospector, lawyers and underwriters are all involved in promotion. In this paper the focus is on a much narrower group of individuals. Promoters can be separate companies hired by the entrepreneur. They may be paid on retainer or have an interest in the company itself. Another type of promoter is hired on as a director. There are also promoters who own several listed companies on the VSE which are currently dormant. Approached by an entrepreneur with a marketable company, one of these shell companies will be restructured buying out this new venture in what is called a reverse takeover.

Promoters will normally take over the responsibility of directing all public relations for the company. This will include the timing and nature of the promotions to be used so as to maximize public interest in the company. The goal is to insure that the company's treasury will have sufficient funds for future development and exploration. Several sources suggested that press releases were announced for only two reasons. One is to promote the stock, the other is to satisfy regulatory body requirements which demand continuous disclosure of all information pertinent to the companies share price. Company directors will want to keep press releases to a minimum for strategic purposes. The discovery of a potential sizable reserve is very valuable information for investors, but would result in a increased price for the property if competitors become aware of this.

Press releases will also be used in the normal process of promoting a stock. In the winter months, little exploration can be done due to the weather. One of the common sayings in speculative markets is "buy on mystery - sell on history". If a company suddenly stops releasing any information, this is normally associated with bad developments for the company. Historically "bad news" press releases have carried more weight than "good news" releases. A sudden run on a thinly traded stock can result in a drastic drop in share price which may be very difficult to recover from, even if the run was not based on fundamentals. A good promoter is very aware of this and normally keeps the company in the news year round by announcing plans for new diamond drilling, joint ventures or new properties being examined for possible exploration.

A promoter involved in building a company will be constantly positioning the company. "Positioning" is a word used to describe how promotion is used to generate demand for the companies stock when additional financing is needed, and insuring that the inside group is positioned to profit from a rise in share price. Several market participants suggested that investors who bought and sold shares in the secondary market are of little importance. Company directors and promoters involved in building a company will be much more concerned with seed capitalists who provided the capital to get started and may be needed to provide capital in the future for this company's development or another company's start. Freyman suggests that an exploration program with the potential for modest success will require at a bare minimum five hundred thousand dollars per year (1978, P. xxi). If a company has not been promoted properly, the result will be a low share price for any subsequent offerings. The possibility exists that the offering may fail, or

more likely that the company will not be able to attract any large private placements. At best, a low stock price will imply a large dilution of existing shareholder equity; in effect a wealth transfer from existing shareholders to new ones.

It is not being implied that press releases are always used to exploit or mislead the public investor. It can be argued vehemently that press releases serve only to the benefit of secondary market day traders and not to the benefit of the company nor public investors. The major brokerage houses on the VSE have personnel assigned to buy and sell shares for their clients. These individuals man computer terminals all day and have the ability to buy and sell shares at a moments notice. With the introduction of Vancouver Computerized Trading (VCT), these individuals have instant access to information which can then be used to scalp shares (buy/sell shares before the news has been assimilated into the share price) as the information becomes available. As a result, public investors are not able to participate in these press releases and are at somewhat of a disadvantage compared to day traders manning such terminals. The directors and promoters of the company will attempt to have any rents associated with the release of information accrue to seed capitalists and long term investors rather than individuals turning over shares for a quick buck.

Due to the relatively large amounts of money invested by seed capitalists, they are in a rather vulnerable position. Trying to liquidate a large position in a thinly traded stock can result in a rapid fall in share price. When private placements are used in secondary offerings, the shares are normally escrowed for one year, which can make these shares particularly risky. The promoter is responsible for convincing seed

capitalists that the risks involved are reasonable, otherwise seed capitalists will be reluctant to lock their money in for such a long period. From the investors perspective, the presence of seed capitalists is of benefit. Quoting Kaiser (1990), "...for a speculative stock to go anywhere, someone must care about it's future. Who has more incentive to care than an insider group positioned to profit substantially from a price increase."

The presence of seed capitalists provides benefits to both the firm and investors. Without this source of capital the promoters options for raising seed capital comes down to trying to get that one in one thousand persons who does not hang up the phone to invest one or two thousand dollars. Obviously this is not a cost effective way to raise seed capital. From an investors perspective one only need to look at the problems with Broker/Dealers in Ontario, to see the benefit of having large seed capitalists tied in to the management of the company.

A recent article in the Financial Post outlined a common procedure some of Ontario's Broker/Dealers used to sell shares in penny stocks (Kelly 1993, P.9). In the first stage, telemarketers would solicit potential investors by offering to send the firms newsletter. This would be followed up three to six weeks later by junior salespeople suggesting "special situations" are available and that they should get in now. The final stage involves calling investors again, pointing out how much money could have been made. The article suggests that the underlying companies have little value and that the demand for those shares will dry up once promotion is stopped. This is also accompanied by exaggerated statements of the companies assets and prospects for it's future. Mining companies on the VSE are protected in part from such abuses, since

minimal exploration requirements are necessary. As well, having a large group of seed capitalists tied into the welfare of the company indirectly protects the welfare of the small investor.

The need for seed capitalists can also be explained by the need for diversification. Promoters are very aware that a large number of venture companies fail. Spreading the risk by having seed capitalists involved in the project allows directors and entrepreneurs to free-up more of their own capital which can be invested in other projects or kept as a reserve. As well, the use of seed capital provides an important vetting process. Silver points out, if another venture capitalist is unwilling to take part in what you feel is a good investment, perhaps you should rethink your investment (1985, P.29). At times promoters get caught up in their own promotion; having other venture capitalists involved implies that they are also convinced that the venture has merit.

As suggested earlier, because of their scarce numbers and the riskiness of investment, promoters may attempt to position these individuals for profit when the company begins to succeed. This form of positioning can take place in several manners. If they are supplying a large amount of capital in the early stages seed capitalists may be offered cheap stock. A private placement may take place off the market at a below market price. The VSE has to approve these transactions, but essentially seed capitalists are being offered volume discounts in the same manner as a wholesale store does. It is also very likely that such investors are privy to extra attention on the part of promoters. Depending on how this would take place, it is likely illegal; however proving it in court is very difficult. It is quite possible that such individuals receive

indirect buy/sell suggestions so as to maximize the return on their investment.

The result of preferential treatment from promoters is that seed capitalists and other members of the inside group earn a superior rate of return on their investment. It can be argued that this is only fair. Those who build the company and take the majority of the risks should reap the rewards. Trying to define what is a fair rate of return for such investors is a very complicated process and any proposed method would have its critics. Governments and legislators have in mind a fair rate of return, while investors seem to want the potential to "make a killing". Promoters stand in the middle; steering the company through the regulatory bodies, raising capital for its development and trying to make some money for themselves.

How promoters raise venture capital and generate enough interest to take a company public is an art itself. As brokers, floor traders or market participants connections were made which are key to their success. Valuation is difficult and the possibility of fraud is a very real threat. In order to make deals you have to be able to associate yourself with an established player. In turn this allows a promoter access to a network of market participants which grows with each successful deal (one that allowed that particular individual to make a buck, not necessarily a successful company). One promoter contacted estimated that approximately 60% of the money they raised for firms was from Canada, with the rest coming from the U.S.A. and some from Europe and Asia.

The larger independent promotion companies will design a full scale plan of attack to take the company public. If they are using mail-

outs, this will involve deciding what will be said and how it will be told. Fact sheets and brochures will be designed and sent out with reply cards to generate interest and provide a measure of investor interest. Brokerage houses will be contacted with the goal of convincing brokers on the merits of this company for their clients. Then there are the dog and pony shows, where a marketing team goes on the road to give seminars to brokers and other potentially large sources of funds.

A good promoter involved with a new company will monitor all aspects of trading in the companies shares on a ongoing basis. One promoter interviewed used an elaborate procedure to track a companies performance. An updated shareholders list was maintained at all times. The stock was charted and any suspicious trades were investigated. For instance, if a large block of shares was sold unexpectedly; using the shareholders list and knowing that a majority of the shares were held with one brokerage house, he would be able to deduce who the broker was who made the trade. A few phone calls would be made and the promoter could then establish the nature of the trade. Knowing who holds the shares and in what proportions allows the promoter the ability to position the stock as mentioned previously.

A method of raising capital which afflicts all major financial markets is the use of illegal commissions to brokers and/or large seed capitalists. This may involve gifts of free or discounts on the purchase of stock, promises of future options on other deals and unwritten agreements (you scratch my back and I'll scratch yours). The goal of the promoter in using these methods to generate interest and sell shares is not to defraud investors, but to raise the capital necessary to keep this firm operating. The smart investor in the secondary market will avoid

promoters who exploit this power, those who don't won't last. Likewise, seed capitalists and brokers will spread the word about a promoter who left them high and dry. On the VSE where reputation is everything promoters have to tread carefully if they are involved in such practices. The regulatory bodies are a threat; but it is more important to protect one's reputation.

Another form of promotion is the use of box trading accounts. du Plessis describes the use of a trading box; "the box directs and influences share price/movements in particular stocks through precise trading conducted in one or more main brokerage accounts" (1988, P.15). In an arms-length box account, several individuals holding a large percentage of shares which are being actively traded (escrowed shares can not be traded and therefore will not affect prices in the short run) turn them over to a third party. This individual may have access to inside information; but will ideally act as a market maker on a major exchange. The benefit for the box operator relative to a market maker being that he/she can walk away if the demand or supply side becomes too strong. By posting a bid and ask price as need be, the result should be a narrower bid-ask spread for the shares price. This increased liquidity and smaller bid-ask spread will add value to the companies shares, and should result in a higher share price. Investors value liquidity, and if they believe that a liquid market will exist should there opinion of the companies prospects change, they will be more likely to invest in the companies shares.

The existence of a box account can provide a smooth transition in prices allowing investors to increase or decrease their holdings at a price close to the listed price. For one market participant interviewed, concern

about trading boxes would arise only if one does not exist. Without a box operator involved the bid-ask spread on a share will likely be much larger. One way to value an asset is to let the markets price it. If you consider promotion an asset for the firm then we can look to one example of a share traded on the Alberta Stock Exchange. Kane Investment Corporation was trading at around \$.10 to \$.13 in May of 1992. Then on June 1, 1992, the share price rose to \$.60 and remained above \$.50 for several months. The only announcement published in Canada Stockwatch around the period of this price increase was that Osvega Financial Services would begin promoting the company. That announcement was made on June 2, 1992.

In order to act as a market maker (box operator), an individual would have to have access to the continual flow of prices. With the introduction of VCT likely candidates would be desk traders trading from a brokerage house account. Ideally, a box operator would take an opposite position to the market at all times. Contrarians would argue that this alone is sufficient to allow them to make money; the continued existence of these individuals in Toronto and New York would support this proposition.

Potential exploitation can take place due to the possible use of inside information. If the box operator has a good idea of who the major shareholders are and how they may respond to a particular pattern of share prices or the release of new information he/she is at a definite advantage. An artificially high price can be the result of a relatively small number of shares being traded if the stock is thinly traded. Sales between offshore and/or nominee accounts can be used to give an impression of trading activity. Buying on the part of a box operator

accompanying new developments for the company can start a speculative wave of purchases as naive investors jump on the bandwagon. The introduction of VCT has helped regulatory bodies to monitor such abuses, but for my period of study which immediately followed the introduction of this system, the potential for and existence of such abuses can not be ignored.

The ability of some box operators to manipulate prices is legendary on the VSE. du Plessis (1988, P.15) refers to Frank Robert Cameron Slichter. " "Bobby the Slicks" reputed ability to control VSE share prices without stooping to such crude techniques as "wash trading" or blatant "high sales", has won him a respectful following among market insiders, even some investigators..... B.C. government regulators [in the early 1970's] found that Slichter, through his position on the VSE's trade floor, was able to service major promoters by "sizing" other traders buy and sell orders and executing desired trades more quickly than was possible for J.Q. Public. In general, he could assess chosen off-floor operators with the superior "market intelligence" that his post provided." In one instance where regulators were successful in prosecuting two brokers for insider trading, it was found that over the period of interest, the insider group controlled from 74 to 95 percent of the trading in a company being promoted (du Plessis 1988, P.37).

The best way to illustrate the role of promoters and the use of box accounts is to refer to an excellent book by Morris Bubbis (1980, P.29-38). In his book, Mr. Bubbis outlines how a mining play may take place. The following passage summarizes chapter 4 of his book; which refers to the early 70's in Ontario. Some of the aspects would be ruled out by regulations existing in B.C., but the basic concepts are similar:

- the mining play begins when a prospector discovers a possible mineralization on a staked property.
- in order to develop the property the prospector will need help and so approaches a major company
- with the help of a promoter, a mining company is formed with 3 to 5 million shares outstanding
- a prospectus is completed and submitted to the regulatory authorities
- one million shares are awarded to the prospector for the property; of these 100,000 are free trading
- as outlined in the prospectus, the promoter will make a firm commitment to purchase 200,000 shares at \$.10
- the promoter will also have options on a series of four lots of 200,000 at \$.10, \$.15, \$.20 and \$.25
- the company begins operations with the money put up by the promoter's firm commitment of 200,000 shares
- Assume it is Fall, the markets are booming, copper is hot and a major copper find took place on an adjacent property
- we have a hot property, it is up to the promoter to fan the flames
- a trading box will be set up with a bid/ask of \$.15/\$.20
- the word is put out and people are on the phones
- the 200,000 firm commitment is sold and the first option of 200,000 at \$.15 is exercised
- the shares are sold at \$.20, raising \$20,000 for the treasury and \$20,000 for the promoter
- now that a prospecting crew is in the field raises the spread to \$.25/\$.30
- another option is exercised at \$.15 per share raising \$30,000 for the treasury
- at this point some investors may begin taking profits, so the box will have to buy up those shares
- up to now \$70,000 has been raised for the treasury, the promoter has made money but most importantly raised the capital necessary to keep the firm active
- it is now Christmas and exploration shuts down temporarily
- to prevent profit taking and retain interest in the company over this period, the promoter announces plans for diamond drilling
- Christmas is over, the share is around \$.30/\$.35; most investors paid \$.25 and have dreams of \$5.00
- the announcement that drilling equipment is at the site raises the share price to \$.40/\$.50

- the phones are ringing like mad and investors are being told that this may be their last chance to get in
- selling has virtually dried up and the price goes to \$.60/\$.65
- Another option is exercised by the promoter, raising \$40,000 for the treasury, while investors paid in excess of \$120,000
- word comes in from the field, visible mineralization
- the price goes to \$.70, everyone is trying to get in
- the last option is exercised raising \$50,000 for the treasury
- results begin coming in, mineralization on the first hole, but it is not of commeriabile value
- selling begins, the box is used to defend the price, but is forced to back off as the price falls to \$.50
- subsequent results are negative, the price falls to \$.25/\$.30
- the box is having a hard time maintaining an orderly market
- the account is used to defend the share price but the box operator does not want to buy back too much stock
- the price continues to fall slowly as the drilling season ends
- the price falls to \$.15/\$.20
- in the off season a decision will be made concerning trying again
- if you consider whether or not a mine was found you would consider this a failure, but money remains in treasury
- exploration is very risky and results do not come easy

Other forms of illegal activity include bribing experts to promote a product and wash trading to give the illusion of trading activity in a company's shares. There have also been allegations of organized crime involvement. Such illegal activities would appear to be more problematic in "new concept" companies where regulators have a more difficult problem monitoring such firms. In one instance, a General Motors employee was quoted in the Wall Street Journal, suggesting that G.M. was interested in a company listed on the VSE. Later it was discovered that this employee had purchased 3500 shares of the company at a pre-prospectus price of \$1.50 per share. When trading began in the company little more than a month later, the share price quickly rose to \$9.00 (du Plessis 1988, P.38). William Pidruchney, the VSE vice-president in charge of listings until 1991 reported to the Matkin inquiry on the VSE

about the problem of organized crime. "The growing size, sophistication and internationalization of crime and criminals put the spotlight on the VSE [as a] means of laundering or rerouting money from criminal activity"(Lush 1993, P.B1). It appears that most public investors are not aware of these potential problems and bear the brunt of costs incurred by their presence.

Chapter 5

Positive Feedback Trading

Throughout the previous chapters of this paper, several fundamental arguments about the nature of trading in mining company IPO shares have been made. Investment in these companies was characterized as involving investment in risky assets for which an accurate evaluation is difficult. Investors engaged in the buying and selling of these shares were characterized as belonging to one of three groups; company insiders, outside market professional's and the general public. It was outlined how company insiders are in a position to take advantage of uninformed (naive) public investors through the use of various promotion techniques. Limits on the exploitation of public investors exists due to the presence of outside market professionals. The final link underlying the empirical focus of this paper is the role of assay results. It was argued that an assay result provides vital information about the expected value of the company. It is hypothesized that promotion is used to sway the investing public to purchase shares at prices that far outweigh the value of the coming assay result. During the period between the announcement of the coming assay and it's release, insiders sell portions of their shares, transferring ownership and risk to the public at inflated prices.

In this chapter a model of positive feedback investment strategies is outlined following the work of De Long, Shleifer, Summers and Waldmann (1990). It will be argued that trading in the shares of mining company IPO's around the release of assay results shows a pattern of

price and quantity relationships consistent with their model. For the moment we will focus on one definition of the role of speculation; that is, that speculation on the part of many investors results in prices that fully reflect all available information. Some shortcomings of the theory will be outlined, and a possible exception to this description of the role of speculation (the model of De Long et al.) will be argued to be a better explanation of trading on the VSE.

Economic principles would suggest that active trading on the part of arbitrageurs and speculators result in prices that reflect all pertinent information regarding a shares value at a given time. If speculators obtain what is believed to be superior information, increased buying (selling) is expected to increase (decrease) the price. Speculators are expected to continue to buy (sell) until the return from so doing is commensurate with the level of risk involved. Arbitrageurs act to keep prices in different markets in line by simultaneously buying in one market and selling in the other. The result of trading by these two participants should be market prices that reflect all available information.

Where economic theory can break down is when it is applied to the real world. The conditions required for a competitive market are rarely satisfied. Economists will generally accept that these violations exist, and focus on the implications of these violations. In the case of the Vancouver Stock Exchange (like all other exchanges to varying degrees) information is disseminated selectively over time. This violates the assumption of perfect information among investors. There are large investors with market power. Whether they intend to manipulate prices or not, due to the illiquidity of these shares, trading will influence prices. This results

from their relatively large scale buying and selling. As well, the underlying asset is very difficult to value. We do not have a homogeneous good to value when assessing a mining company's mining properties. There is also the possible presence of box accounts that can be used to influence prices in the often thinly traded markets on the VSE.

With a large amount of trading generated from offshore accounts, regulators have limited ability to control illegal practices in some instances. A lot of their power rest in moral suasion and the threat of halt trading orders. Brokers are also subject to the scrutiny of the regulators. They are expected to "know their clients", and will be considered responsible for any trading by those clients. A more serious threat in limiting exploitation is to a promoters reputation. If abuses are too excessive the trading community will effectively ostracize the individual. Furthermore, brokers will lose clients if they consistently lose their money. Therefore it is in their interest to avoid promoters who repeatedly exploit the small investor.

An analogy can be drawn between the market and fishing. Just like the fisherman who over-fish now will run out of fish in the long run; the promoter who overtly exploits the small investors will drive them away to other markets. Or do they?. De Long et al. suggest that every new investment may look different to investors (promoters will convince them of this) which will limit their learning from past mistakes. It is often the case that a investor who purchased a speculative stock will observe that there was a point during the shares meteoric rise before the collapse when a profit could have been taken. This in itself would act as a type of positive reinforcement (the fish that got away) that would keep the investor coming back. Similar to a slot machine, this payoff would come

at a variable ratio, which is argued by psychologists to be the most effective type of reinforcement.

With the company directors, underwriters and promoters welfare tied closely together this group becomes distinct from other market participants. The promoter and underwriter will have been involved in numerous deals giving them a competitive advantage in the form of experience. The previously described "box operator" who uses experience in charting the companies share price, follows shareholder lists, and has contact with company insiders can apply the knowledge gained from trading in previous IPO's to the current one. This group of informed market participants have market power, superior knowledge about the company, and through past experience; an understanding of the investing publics buying habits. The promotion group has learned through experience what the public will want to see before they buy and how the promotion should be timed so as to virtually guarantee the success of any share offerings and maximize their own welfare.

With the difficulty involved in valuing a mining company, sunspot equilibrium arising out of differing probability beliefs on the part of investors can easily occur. This outcome is further exaggerated since investors are unsure of what it is their probability beliefs differ on. If it is accepted that investors are primarily speculating on speculation, or are unable to learn from past mistakes while continually hoping to hit the big one, then it can be argued that past price changes reflect sunspot activity. Rather than investing on the basis of fundamentals, investors are "chasing the trend" in prices; believing the trend in prices to be reflective of the company's potential for capital gain.

It will therefore be asserted that the demand function of the outside investing public for the shares of mining company IPO's is a function of the price change:

$$D_t = f (P_{t-1} - P_{t-2}, \dots)$$

D_t is demand in period t.
 P_t is the price in period t.

For the purposes of this paper it is not important that a precise investor demand function be established. De Long et al. basing their model structure in part on the experimental psychology work of Andreassen and Kraus posit that the demand of naive investors is a function of the price change two periods prior:

$$D_2 = \beta (P_1 - P_0) = \beta P_1$$

$$D_3 = \beta (P_2 - P_1)$$

D_t is demand in period t.
 β is the positive feedback coefficient.
 $\beta > 0$

In period 0, the price of the stock is assumed to be 0 (in the model of De Long et al.). "Stock is in zero net supply: it should be thought of as side bets that investors make against one another".(De Long et al.,p.384). Making demand a function of the previous periods price change does not allow investors to react immediately to the most recent price change. The adoption of this feature is based on Andreassen and Kraus's claim, "... that it takes a sequence of rising prices before their experimental subjects begin to chase the trend" (De Long et al. P.385).

It is suggested that informed market participants anticipate that public investor demand functions will be strongly influenced by price changes. Information about underlying preferences can then be packaged with a promotional campaign supported by buying at key

points to initiate speculative purchases on the part of uninformed traders. The uninformed (naive) investors will become so engulfed in the speculative frenzy associated with the company, that they are not able to objectively evaluate the prospects of the company. Instead, they choose to watch the price rise, perhaps believing it to be a reflection of buying on the part of better informed investors who know that this company is going to hit it big.

The uninformed trader will be particularly susceptible to speculative purchases when they are presented with a series of price increases associated with a promotional campaign announcing the assay result. This presents insiders who are aware of these buying behaviors the opportunity to start a price increase, knowing that uninformed traders will jump on the bandwagon. Kindleberger is quoted in De Long et al. suggesting, "[T]he professional insiders initially destabilize by exaggerating the upswings and the falls, while the outside amateurs who buy high and sell low are ... the victims of euphoria, which infects them late in the day"(P.381). On the VSE where a large proportion of shares may be held by insiders the potential for insider destabilization is high.

One scenario that seems applicable in describing how insiders may start a speculative buying spree to take advantage of the uninformed could proceed as follows. First, a promoter knowing that a cash injection will be needed for continuing operations will negotiate a large private placement (at or below market price) just before announcement of the upcoming assay result. For the uninformed, this may be interpreted as good news about the upcoming assay result (money will be needed to build a mine). In reality it will probably be used to keep the company afloat. This information alone may be enough to start the initial price

increase. Outside market professionals, such as day traders who have been following the company may be tipped off as a result and begin buying in anticipation of the assay result. Otherwise, buying on the part of insiders will help drive the price up when accompanied by news of the coming assay result.

In response to this price increase, uninformed traders begin to buy shares of the company at inflated prices. The inside group has a choice of restricting their supply of shares in an attempt to drive the price even higher. However, there is a ceiling imposed by the presence of day traders. At some point in the speculative price rise, these outside market professionals will begin to sell shares and possibly short any shares that they can borrow. Realizing that the price has risen too quickly given the likelihood of finding a profitable ore deposit, these day traders will take opposing positions. As well, the operations department of the VSE monitors trades in all shares through the use of their computerized trading system. The computer immediately notifies personnel of "large" price changes allowing the VSE to halt trade any suspicious trades pending contact with company officers. Justifying speculative price increases is not something promoters will want to try and convince officials of on the basis of fundamentals. It also allows the naive to reassess their planned purchases. As a result, promoters will attempt to avoid bringing undue attention to the company being promoted.

Instead it is suggested that some of the seed capitalists shares are sold off maintaining the price at an above value price, but below a price that would initiate selling on the part of day traders. In their model, De Long et al. impose this type of constraint by introducing the presence of "passive investors" with demand functions:

$$D_1P^i = -\alpha (P_1 - P_0) = -\alpha P_1$$

$$D_2P^i = -\alpha (P_2 - \Phi)$$

$$D_3P^i = -\alpha (P_3 - (\Phi + \theta))$$

where:

$$\alpha > 0$$

$\Phi + \theta$ is the realized price in period 3.

Φ is the value of the fundamental shock received in period 2 by passive investors (informed investors having received a noisy signal ϵ of its value in period 1)

Passive investors as defined in the model take positions opposite to any deviation between the current price and known fundamentals.

By buying and selling shares as described previously around the assay result, insiders are able to transfer ownership to the public. In the process, seed capitalists, the promoter and underwriters who sell the shares at the height of speculation earn above average returns. The uninformed pay a premium for these shares, the cost of naiveté. The advantage for the company is that they will be able to raise money much easier for the treasury through private placements. This is because seed capitalists will be much more willing to supply funds being reasonably confident that uninformed traders will be willing to pay a premium for these shares in the future.

Occasionally the mining company gets back positive results and the uninformed make their windfall gain. It is not being argued that uninformed traders are being fraudulently exploited. They are paying too much for the opportunity to share in this windfall gain should the company succeed. While insiders and seed capitalists receive abnormal returns for the level of risk involved in their investment.

We can now formalize the model of De Long et al., drawing inferences from their paper that can be used in understanding the

trading of mining company IPO shares around the release of assay results. The authors develop a four period model that shows how rational speculation can be destabilizing in the presence of informed and uninformed traders. In there model they define three groups of investors:

- 1.) positive feedback traders (PFT):
uninformed (naive) investors
- 2.) passive investors (PI):
uninformed (rational) investors
- 3.) informed rational speculators (IRS):
informationally superior investors

The demand functions for the three groups of investors are defined by De Long et al. as follows:

$$D_t^{pft} = \beta (P_{t-1} - P_{t-2}) \quad (1)$$

$$D_t^{pi} = \alpha (\Phi - P_t) \quad (2)$$

$$D_t^{irs} = \frac{1}{2\gamma\sigma_{R_t}^2} E(R_t) \quad (3)$$

$E(R_t)$ is the expected return in period t.

$\sigma_{R_t}^2$ is the variance of expected return in period t.

α is the risk aversion parameter.

$\alpha > \beta > 0$

D_t^{irs} is chosen so as to maximize a mean variance utility function over the distribution of the periods expected wealth in each period:

$$U = E(R_t) - \alpha \sigma_{R_t}^2$$

For example, in period 1 informed rational speculators receive a signal ε about the fundamental shock (the share price) that is realized in period 3. It is assumed that these investors are able to estimate expected returns and the associated variances from buying shares in period 1 and selling them in period 2. The only free variable is period 1 demand (ie. the number of shares purchased). Substituting the expected return and variance into the utility function; taking the derivative of this function and then setting it equal to zero provides a solution for the period 1 demand for these shares by informed rational speculators. The same process is repeated in period 2.

In order to keep the risk bearing capacity of the model constant, the number of rational speculators and passive investors are set equal to μ and $1-\mu$ respectively ($0 < \mu < 1$). This is imposed to allow examination of increasing the proportion of speculators without affecting the risk bearing capacity of the model. An increase in the number of speculators that is accomplished by simply adding more speculators has two partially offsetting effects, "it destabilizes prices because it enhances the stimulus of rational investors' purchases to positive-feedback trading, and it stabilizes prices because it increases the risk bearing capacity of the market"(P.386). The authors simply note that they have removed this effect and derive their results having eliminated this possibility.

In periods 0 and 3 there is no trading. "Stock is in zero net supply: it should be thought of as side bets that investors make against one another"(P.384). Period 0 provides a benchmark for comparison of returns in the following periods. The payoff is a dividend which becomes known to all investors in period 3, at which time investors reimburse one

another according to their positions. The flavor in this model is derived from the timing of release of information to investors. Passive investors take positions based on fundamentals given available information. In period 1, IRS receive a signal of the period 2 fundamental shock. It is not until period 2 that PI receive that signal; while PFT trade solely on the basis of price changes between the two periods. It is this informational asymmetry that allows IRS to exploit the uninformed traders and results in a share price that will likely not obey fundamentals.

Since we know the proportions of rational speculators and passive investors, we can derive period 1 and period 2 market clearing conditions:

$$0 = D_1^{PFT} + \mu D_1^{IRS} + (1-\mu) D_1^{PI} \quad (4)$$

$$0 = D_2^{PFT} + \mu D_2^{IRS} + (1-\mu) D_2^{PI} \quad (5)$$

The authors are standardizing the proportion of rational speculators and passive investor demands against the positive feedback traders.

Inferences can then be drawn with regard to increasing the number of rational speculators. Assumptions about the demand functions of the three participants will allow us to derive period 1 and 2 prices for the shares and then draw conclusions about the effect of interaction amongst the three groups on share prices.

In period 2, rational speculators are aware that the price in period 3 will move towards it's fundamental value Φ (based on information which becomes available). Therefore, in period 2 the demand of a informed rational speculator will be:

$$D_2^{IRS} = \alpha (\Phi - P_2) \quad (6)$$

Setting the period 2 demand function of passive investors equal to that of rational speculators allows the authors to examine the consequences of increasing the number of informed rational speculators without changing the risk bearing capacity of the model as was described earlier. The dissemination of information can best be explained by listing the series of events:

- period 0 No event, this period stands as a benchmark
- period 1 IRS receive a signal $\varepsilon = \Phi + e$, where e is unknown until period 2 (the signal may or may not be noisy) of the period 2 fundamental shock Φ .
- period 2 PI and IRS learn of the true fundamental shock Φ .
- period 3 Dividend is declared, obligations are then fulfilled. dividend = $\Phi + \theta$, where θ is an unpredictable period 3 fundamental shock.

At first glance, economic theory would argue that informed speculators receiving information in period 1 would simply bid the price up to it's new fundamental value. However, the model of De Long et al. shows that the price may be bid away from fundamentals as informed speculators take advantage of positive feedback traders.

In examining the case of a noiseless period 1 signal (i.e. the signal received in period 1 by IRS is that which will becomes available to passive investors (PI) in period 2, $\varepsilon = \Phi$), the authors assume there will be a positive period 1 demand shock $\Phi = +\phi$ (the results are symmetric for $\Phi = -\phi$). In this case competition between IRS will bid the period 1

price up until it equals the period 2 price. "If the rational speculators signal ε is perfectly correlated with the period 2 demand shock Φ , then from their point of view there is no uncertainty in period 1 about the period 2 stock price"(P.387). With no uncertainty as to the period 2 price, competitive bidding will result in $P_1 = P_2$.

For the purposes of this paper, only the case of a positive period 1 demand shock ($\Phi = +\phi$) is important. It would be unrealistic to assume a promoter would attempt encourage investors to "overly" short stock and then buy them back from these investors when they become relatively cheap. First it is argued that promoters want to transfer ownership (and associated risks) to outside investors at inflated prices. Attempting to create a speculative run selling shares implies increasing ownership; taking on more risk. Since prices on the VSE often reflect speculative potential, driving a share price down introduces the possibility that the public will associate this stock and it's promoters as losers. The VSE is a speculative market where the public wants to "bet on a winner". Shorting stock, besides being difficult for some investors to comprehend, also exposes them to unlimited risk. These factors together suggest that insiders will likely not attempt to take advantage of a negative demand shock (such as initial results from the mine site being negative).

The empirical analysis in chapter 6 will examine trading in the shares of mining company IPO's around the release of assay results. Selection of the sample was made using Vancouver Stockwatch; manually searching for reported assay results. Company directors have a choice over the form of that release. As such, they will very likely release core sample reports (the type being searched for in Stockwatch) only if results are positive. Otherwise, they will likely choose not to report them

or have a geologist discuss positive aspects of the area being assayed and some of the past mining successes in the area. This further supports the decision to focus only on the case where the period one demand shock is assumed to be positive.

The solution for the period 1 and 2 prices can easily be solved. Substituting equations 1,2 and 6 into equation 5 yields the period 2 equilibrium condition:

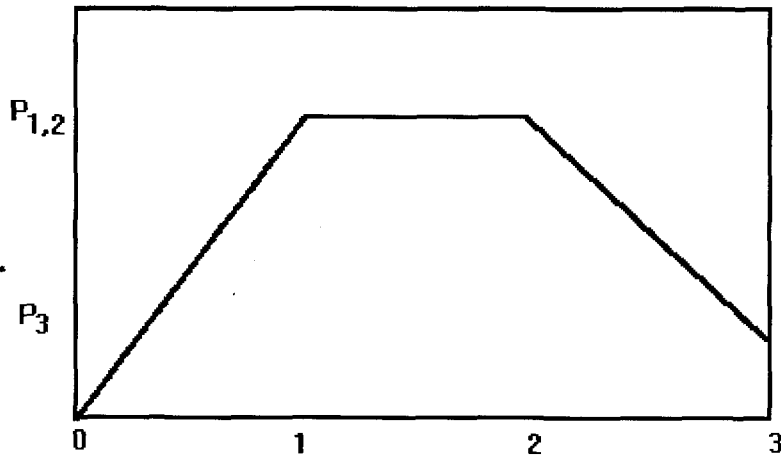
$$0 = \beta P_1 + \alpha (\phi - P_2) \quad (7)$$

Since competition amongst IRS forces P_1 to equal P_2 , we can solve this equation to show:

$$P_1 = P_2 = \frac{\alpha \phi}{\alpha - \beta} \quad (8)$$

Since α is assumed to be greater than β (a condition necessary for stability of the model), the resulting price in period 1 and 2 must be above the expected value ϕ . This can be seen in the diagram below which shows prices rising above the fundamental value ϕ in periods 1 and 2 before being forced back to $\phi + \varepsilon$ in period 3 by liquidation.

Diagram 1
 Prices with a noiseless signal of the period 2
 fundamental shock in a positive feedback scenario

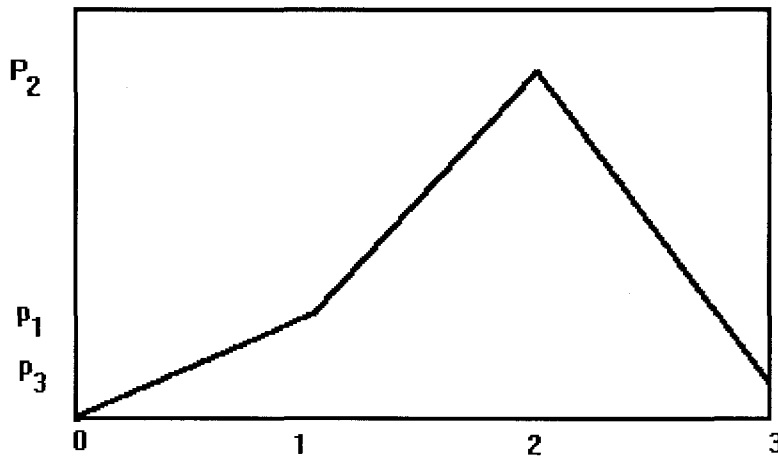


$$P_1 \text{ and } P_2 = (\alpha \phi) / (\alpha - \beta)$$

$$P_3 = \phi + \varepsilon$$

The authors proceed to extend the model by introducing uncertainty about the signal ε received in period 1 by the informed rational speculators. Specifically, they assume $\varepsilon = 0$ with probability $1/2$ and $\varepsilon = \phi$ with probability $1/2$. The result is that provided $\beta > \alpha/2$, the price in period 2 is greater than the period 1 price due to the presence of informed traders. The resulting pattern of trades in the four periods is shown below.

Diagram 2
 Prices with a noisy signal of the period 2
 fundamental shock in a positive feedback scenario



$$P_1 = \phi \alpha / (2 (\alpha - \beta))$$

$$P_2 = (\beta P_1 / \alpha) + \phi$$

$$P_3 = \phi + \varepsilon$$

The second diagram showing trading resulting from uncertainty about the period 1 signal is the one this author expected to see in the examination of mining stocks. One would not expect insiders to know with certainty the results of the assay result. It was hypothesized that in the initial period, insiders would increase trading in the shares of the company prior to announcement of the coming assay result. In the second period announcement of the coming assay result would start speculative buying on the part of uninformed investors (positive feedback traders of the De Long et al. model). Experienced investors would get in early, while the less experienced would buy at the height of speculation. It was then hypothesized that in period three the release of the assay

result would bring about an adjustment of the shares price towards fundamentals.

In initial examinations of the data, no such pattern or relationship could be found. Fortunately, one of the local brokers had warned the author against generalizations of the market. He was trying to point out that every deal (mining play) is different. The geology of the site will be unique, but more importantly the organizers and promoters behind the company will have different methods of directing the company and its promotion. A proposition that is supported by the writings of Bubbis (1980) and Kaiser (1990). In looking for a specific pattern of trading in all mining company shares, these factors are ignored.

In the next chapter, an empirical study examines trading in mining company IPO shares before and after the release of assay results. The examination finds evidence supporting the existence of positive feedback investment strategies as proposed in the paper of De Long et al. This would support the assertion that insiders take advantage of their position in the promotion of their companies at the expense of naive public investors.

Chapter 6

Empirical Testing of the Model

The two models of De Long, Shleifer, Summers and Waldmann (1990) discussed in the previous chapter make precise predictions about the price of shares at each period. Assuming a noiseless period 1 signal of the upcoming fundamental shock the period one price should equal the period two price. As well, the period one and two prices should be above the fundamental price which is established in period three ($P_2=P_1>P_3$). If the period 1 signal is noisy; their model would predict the period 2 price being greater than the period 1 price which in turn should be greater than the period 3 price ($P_2>P_1>P_3$).

Application of these models to the trading of shares requires some modifications, since the model allows for trades at discrete periods, while trading takes place continuously. In applying these models to the trading of shares in mining company IPO's around the release of an assay result, it is proposed that period one corresponds to the receipt of preliminary reports from the drilling site by company insiders and announcement of the coming assay result. Period two corresponds to the release of the assay result. At this time market participants who are knowledgeable of the implications of the assay result begin buying and selling shares in anticipation of the share prices return to a fundamental value in period three.

Empirical testing of the model therefore required designing a database of trading in mining company IPO shares and examining if the above predictions of the De Long et al. models could be verified. Through cooperation with the VSE, a database of all transactions that took place

through the facilities of the exchange from 1988 through 1990 was examined. The database consisted of more than 4.5 gigabytes with data on each trade, allowing the identification of all final transactions in these shares. Information on each trade included price, volume, date, time and identification of the brokerage houses involved.

The first step was to identify and select the junior mining companies to be examined. Using the VSE Review, a list of companies was identified as having gone public from July 1987 to December 1990. To keep the sample somewhat uniform only companies that had assets within B.C. were selected for the study. The final step involved in the selection process involved identifying if and when assay results were released on the company. Vancouver Stock Watch was used to identify the date of assay results for each of the companies. This involved manually searching 36 volumes (approximately 12,000 pages) of the publication scanning for the release of assay results on the companies of interest. From this research resulted a list of 198 different assay results over the three year period. This list was later cut to 63 assay results from 51 different companies over the three year period. The companies assays that were eliminated from the list of 198 were found to have very sparse trading during the period surrounding the release of assay results.

As mentioned in the previous chapter, a company was selected for the study only if assay results citing mineral concentration was published in Vancouver Stockwatch. The date of the assay results release was recorded and then used in building the database. This has the effect of screening out those companies who had disappointing results. These companies would likely not report them; possibly having a geologist cite potentials of the area being explored. This would hopefully

have the effect of minimizing the damage to the companies share price resulting from poor assay results, and keep investors dreams alive.

Having built the required database the problem now became one of trying to identify if the proposed trading pattern exists. In order to focus on trading around the release of assay results, a 40 day period was selected surrounding the release of the assay. This consisted of the 30 days before and the 9 days after the assay result date. Initially, for each assay result of interest the volume as well as the high, low and closing prices were recorded on each day. As a first attempt at examining the data it was decided that a plot of the average closing price and volume on each of the 40 days would be examined. Although averages are biased by the presence of higher priced shares the resulting diagram provides interesting information about the trading pattern in these shares. Ignoring the inherit problems of averages, trading in these shares was found to be consistent with the model of De Long et al. as can be seen below:

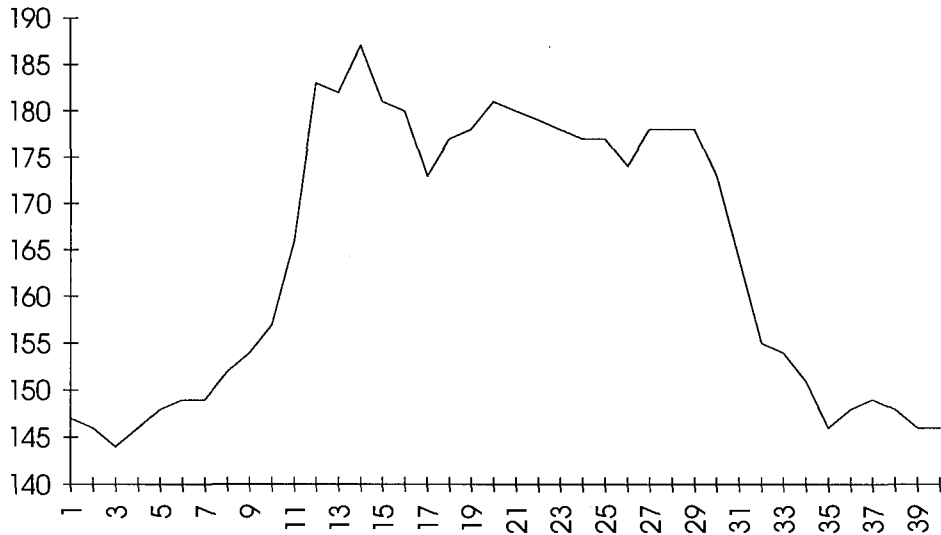


Diagram 3
 Plot of average closing price for 63 assays over
 the 40 day period. Assay released on day 31.

The diagram shows a pattern of trading consistent with the model of De Long et al. relating to the release of a noiseless period 1 shock to insiders. Examination of the average high-low-close and volume chart on the next page shows increased trading and greater variability between the high and low prices on the day of the assay results release. There is similar activity roughly 17 trading days prior to the release of the assay, which may correspond to announcement of the coming assay result.

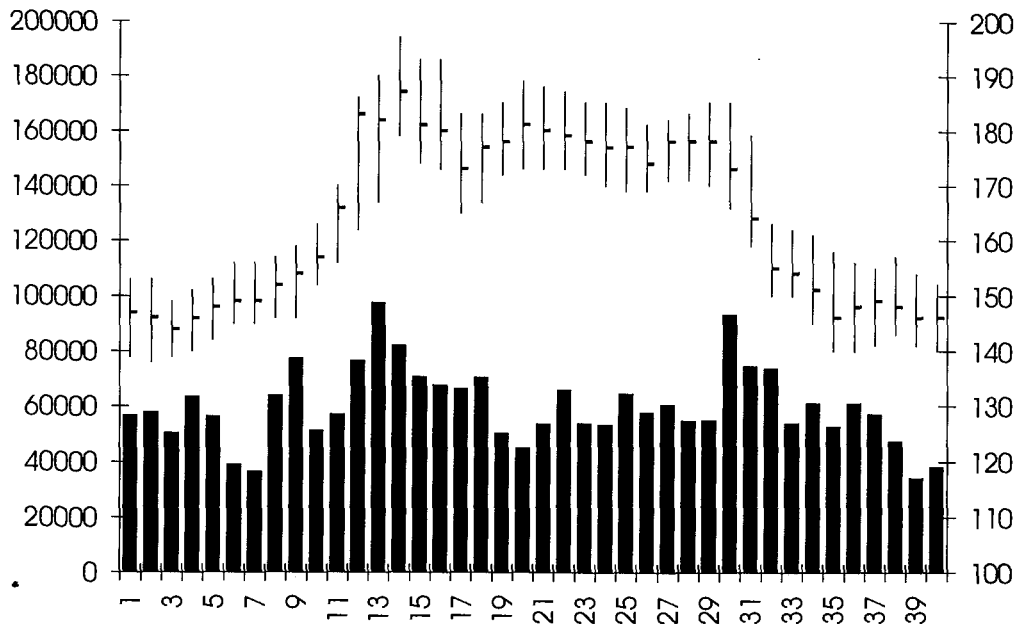


Diagram 4
 Plot of average high-low-close and volume
 for the 63 assays over the 40 day period.
 Assay result released on day 31.

In these two diagrams average prices were used to plot price and volume, enabling the identification of the hypothesized pattern. Two problems can be cited with such a simple procedure. First, companies whose shares were trading at \$8.00 would have 16 times the influence of a share trading at \$.50 in the calculation of an average. Secondly the use of diagrams in support of a proposition is too subjective for the purpose of making conclusive statements. However, these diagrams can be used in support of (and in designing) an empirical study using regression analysis.

In conducting this part of the analysis returns were used for each of the companies closing prices over the 40 days. This resulted in 2457

observations of the 63 reported assays involving the calculation of 39 returns around the release of each assay. The formula used for calculating returns was:

$$R_t = (P_{t+1} - P_t) / P_t$$

Returns have the advantage of being standardized by dividing the share price change by the initial price. This will nullify the effect high dollar value shares have in the calculation of averages. Dividends were left out in the calculation since the companies were typically not in a position to pay dividends.

If the release of news concerning the information has no effect on share prices, then returns over the 40 day period should be constant (i.e. $R_{t+1} = R_t + e_t$ for all t ; e_t is a random error term). To test this proposition, dummy variables were used to signify the three periods corresponding to the model of De Long et al.. According to the first model we would expect returns to be positive in period 1, constant in period 2 and negative in period 3. If the period 1 signal is noisy, then we should see returns that are positive in period 1 and period 2, while negative in period 3. As well, the period 2 return should be greater than the period 1 return.

Based on the diagrams from the first part of the study a decision was made to test if period 1 in the model corresponded to trading in shares from days 10 through 14. This would correspond to the four returns numbered 10, 11, 12 and 13. By using a dummy variable (D1) to indicate that the calculated return corresponded to one of these four

days, tests of significance could be conducted to determine if the proposed pattern exists.

According to the model of De Long et al., the first period of increasing returns should be followed by a period of constant or increasing returns leading up to day 30. Dummy variable two (D2) was used to indicate if a trade had taken place on days 15 through 30. This would correspond to calculated returns numbered 14 through 29. The final dummy variable (D3) was used to identify if a trade had taken place on days 31 through 35. These days correspond to returns 30 through 34.

If the noiseless period 1 signal model is representative of trading in these shares around the companies assay, then results from a regression of R_t on D1, D2 and D3 should result in the coefficient on D1 being positive and the coefficient on D3 being negative. Both of these coefficients should be statistically significant. D2 should be approximately 0, and statistically insignificant. If the noisy period 1 signal of the fundamental shock model is more representative of trading in these shares, the coefficient on the period 2 dummy variable should be positive and greater than the coefficient on the period 1 dummy variable. Since the assay results were conducted independently over three years, there is no reason to believe the error terms are correlated. As such the use of a pooled cross sectional analysis is unnecessary.

One string of data was constructed by concatenating companies one after the another. The result was one sample of data of 2457 observations. Using this long string of data, one regression of returns versus the three dummy variables was performed. The specification of this regression was:

Regression Model

$$R_t = B^1 D1_{t+1} + B^2 D2_{t+1} + B^3 D3_{t+1} + \varepsilon_{t+1}$$

$$R_t = (P_{t+1} - P_t) / P_t$$

$$D1_{t+1} = \begin{cases} 1 & \text{if } t+1 = 11,12,13,14 \\ 0 & \text{otherwise} \end{cases}$$

$$D2_{t+1} = \begin{cases} 1 & \text{if } t+1 = 15,16,17,\dots,30 \\ 0 & \text{otherwise} \end{cases}$$

$$D3_{t+1} = \begin{cases} 1 & \text{if } t+1 = 32,33,34,35 \\ 0 & \text{otherwise} \end{cases}$$

The results from the simple regression analysis follow.

Table 1

Results from simple regression analysis

Variable	estimated coefficient	standard error	t - ratio
B ¹	0.0367	0.00486	7.54
B ²	0.00522	0.00272	1.92
B ³	-0.0109	0.00486	-2.25

R square = 0.022

Due to the inclusion of 63 different assays in the regression, it is quite likely that problems with heteroskedasticity of the error terms are present. To correct for this problem, a second regression was performed using White's (1980) heteroskedastic-consistent covariance matrix in the estimation procedure. The results from this regression follow.

Table 2
Results from regression analysis using White's
heteroskedastic-consistent covariance matrix

Variable	estimated coefficient	standard error	t-ratio
B ¹	0.0367	0.00747	4.91
B ²	0.00522	0.00246	2.12
B ³	-0.0109	0.00484	-2.26

R square = 0.022

The final part of the empirical analysis involved performing separate regressions for each of the 63 companies. Then an average value for each of the three coefficients was calculated. Finally, a t-value was calculate using the formula:

$$t = \frac{B^i - 0}{\sigma_{B^i} / \sqrt{n}} \quad i = 1, 2, 3$$

Bⁱ is the average coefficient value for dummy variable i
n is the sample size
σ is the standard deviation of the estimated Bⁱ

The results for this part of the analysis follow

Table 3
Results from the regression analysis where the
estimated coefficient is the average of the 63 regressions

Variable	estimated coefficient	standard error	t-ratio
B ¹	0.0367	0.0102	3.58
B ²	0.00520	0.00283	1.83
B ³	-0.0107	0.00578	-1.85

The results of the three regressions support the first model of De Long et al., that of a noiseless period 1 signal being made available to insiders in period 1. This would suggest that on average, insiders are very confident about the outcome of the future lab report on the assay prior to its announcement. An examination of the trading surrounding each of the 63 assay results does not show such a consistent pattern. However, this can be attributed to the unique characteristics of each mining company play.

The cost to naive investors can be examined by observation of several of the average closing prices during the 40 day period of study. On day three, the average closing price was \$1.44. By day 14 the closing price had risen to \$1.87, and by day 40, 9 days after the release of assay results, had fallen to \$1.46. Those who bought at the peak and sold at the low, would have lost 22 percent of their investment in just over two weeks (the cost of naiveté). Investors who had purchased shares prior to the rapid price increase and sold at its peak would have earned a 23 percent return in a similar period.

Conclusion

The focus of this paper was an examination of trading in the shares of mining company IPO's surrounding the release of an assay result. A model of positive feedback investment strategies was used to characterize how trading in these shares would proceed in the presence of informed and uninformed traders. It was argued that the advantageous position of company insiders allowed them to exploit the naive investing public; capitalizing on their superior information and investor naiveté.

The model developed predicted that once insiders learn of the fundamental shock to come (the results of the assay) they will attempt to destabilize prices. Driving them away from fundamentals prior to release of important fundamental information and then selling shares to the uninformed at inflated prices. Naive investors were characterized as using movements in share prices as the key piece of information in their buying decision.

Empirical and graphical results support the existence of the hypothesized relationships. As well, it was found that the cost to naive investors who purchased these shares could rise as high as 22 percent over a two week period. While those who "bought low and sold high" could have earned over 23 percent in a similar period.

It was further hypothesized that insiders were the primary beneficiaries on the part of the outside investing public. This took place in two forms. The first was through the ability to sell shares at inflated prices during the period between announcement of the coming assay result and it's actual release. The second is through transfer of

ownership and the associated risks. In launching a mining company, a large proportion of shares are initially held by directors, underwriters, promoters and seed capitalists. Through the use of high exposure news events such as the release of assay results insiders are able to generate increased interest leading to speculative buying of these shares. Once the news has been made public only other outsiders may remain to buy the shares, thus facilitating the transfer of ownership.

Without detailed information of individuals involved in each trade and their association to the inside group, examination of this claim is difficult. However, further research in this area provides an interesting avenue for further study. Although the use of nominee and offshore accounts make such an investigation difficult.

This paper did not attempt to pass judgment on the Vancouver Stock Exchanges value to society. The focus was on the impact of informed speculators on market prices surrounding an information event. Traditional economic theory argues that the presence of informed rational speculators would tend to force prices to reflect fundamentals. As well, use of the model developed by De Long, Shleifer, Summers and Waldmann in the investigation of the effect of informed rational speculators raises questions about the contribution of speculation to market efficiency. In this paper it was argued and supported by empirical research that insiders utilize their superior information to maximize their own welfare at the expense of naive investors. Whether this should be addressed in policy regulation or passed off as caveat emptor will not be discussed. It is hoped that the body of this paper will help those interested in understanding some of the intricacies of Vancouver's venture capital market and how it operates.

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