Performance of New Mining Issues

by

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INTRODUCTION

This paper assesses the performance of new mining distributions on the Vancouver Stock Exchange and draws inferences about the attitudes of those investing in such issues. Aspects considered include (1) salient features of mining companies that receive new financing, (2) quarter-by-quarter price-relative performance commencing with the new issue date, and (3) share turnover and transaction statistics.[1] The interval spanned, that is, post-1965, represents the period during which the Vancouver Stock Exchange (VSE) emerged as a major Canadian exchange.

Prior studies of new issue performance in the U.S. and Canadian markets point to certain departures from hypothesized relationships between expected returns and risk under conditions of investor risk aversion. Friend and Longstreet (1) concluded that "the weight of evidence, though not conclusive, points to a lower return to investors in unseasoned, small, and low-quality issues than in other securities generally." Stoll and Curley (3) found that Regulation A issues outstripped the S & P Industrial Index in the short run, but lagged behind in the longer run. Shaw, in his analysis of public offerings by Canadian industrials (2), noted that the performance of unseasoned stock offerings taken as a group both failed to match that of seasoned stocks and declined continuously through the fourth year after issue; positive skewness was observed in the underlying distributions of performance relatives for the unseasoned issues.

Our research, conducted in a market environment unfettered by national securities regulations, contributes to the mounting evidence that the rates of returns typically achieved on the new issues of small, speculative ventures (without a background of successful operation) are not competitive with those realized on the shares of leading companies. Two samples of newly underwritten Canadian mining stocks featured median price or return relatives that varied inversely with

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[1]Price or return relatives are defined as ratios of succeeding end-of-period prices.

time. Investors in the median issue of each sample approximately broke even during the quarter in which the financing occurred, but lost well over 50% during the interval between new financing and mid-1971 (or date of last reported price). The fact that about one-tenth of the issues sampled did exceptionally well gave rise to a mean loss of roughly 6% for the two samples taken together over the entire period. The figures just cited do not take into account commissions, bid-ask differentials, and discounts from quoted prices.

Our conjecture, based upon evidence presented below, is that the erratic behavior of new mining issues is attributable to a combination of circumstances. First, underwriters and promoters have considerable leeway in the promotion of new mining ventures and the distribution of their shares. Second, the attributes of the issuer render it most difficult to differentiate one venture from another. Third, the sizable fraction of new funds siphoned off by promoters and underwriters not only motivates such persons to activity that varies directly with market responsiveness but also necessitates extraordinarily high returns on funds that flow through to exploration to provide a satisfactory return to investors. Finally, investors are induced to trade frequently and to keep returning to the market despite the fact that repeated play almost inevitably leads to cumulative losses.

The data base for the subsequent analysis consists of three quasi-random samples of mining shares distributed through the VSE. The first sample includes 22 issues underwritten during 1965; the second, 28 stocks underwritten at diverse dates between 1966 and 1970; and the third, 11 issues underwritten in late 1971, or early 1972. Consistent with the thrust of the VSE, the emphasis is upon speculative issues of firms involved in grass roots exploration activities (as distinct from those whose outlays are designed to develop known or reserves).

THE DISTRIBUTION PROCESS

Few institutional impediments exist to retard the financing of new mining ventures. The mining venture commences life as a private concern, converts at

an early stage to a public company that initially offers its shares to the public

through an over-the-counter distribution designed to qualify the firm for listing,

and then graduates to the VSE either as an interim or regular listing.

Private Companies

Section 21, subsection 2m, of the 1967 British Columbia Securities Act

defines a private company as a firm with no more than 50 shareowners and stipu-

lates that:

> "Registration is not required to trade in securities of
> a private company by the private company where the trade
> is made by a director of the private company with rela-
> tives, close personal friends, or business associates."

It is commonplace for promoters to designate one or more securities

salesmen as directors. As long as the purchasers of company shares are willing

to leave their shares in street names, distribution of private company shares

to a wide range of investors is permissible. As many as 40 to 50 salesmen make

their living on this basis in the Vancouver area alone.

The benefit derived by the promoter is the minimization of personal

investment. Mining claims - the basis upon which the shares are promoted - are

ordinarily acquired in exchange for shares in the company. Expenses of going

public range from $6,000 to $30,000 and can be financed by the sale of private

shares to the public.

Initial Public Offering

Public offerings, other than those made through Exchange facilities,

necessitate approval of the B. C. Commission and submission of a Prospectus

that provides "full, plain and true disclosure of all material facts relating

to the securities offered." Disclaimers include the stipulations that (1)

"there is no existing over-the-counter market for the company's shares," (2) "a

purchase of the shares offered...must be considered a speculation," (3) "no

securities commission...has in any way passed upon the merits of the securities

offered," and (4) "no survey has been made of the company's located mineral

claims."

The principal requirement of the Commission appears to be the stipulation that shares given in exchange for mineral claims be placed in <u>escrow.</u> In the words of one "Statement of Material Facts,"

> "The escrow restrictions provide that the shares may not be traded in, dealt with in any manner whatsoever, or released, nor may the Company, its transfer agent or escrow holder make any transfer or record any trading of the shares without the consent of the Superintendent of Brokers. If the Company loses or does not obtain a good marketable title to or abandons or discontinues development of the property which was the consideration for the shares in escrow, or in the event the property is not as represented, the holders of the escrow shares have agreed to advise the Superintendent of Brokers and to surrender by way of gift to the Company such number of escrowed shares as the Superintendent of Brokers may deem fair and equitable."

The extreme flexibility afforded the issuer is evidenced by the following <u>Plan</u> <u>of</u> <u>Distribution</u> contained in a recent Prospectus...

> "The Company will sell its shares through persons or companies registered under the Securities Act, 1967 and will pay a commission of up to 25% or 10¢ per share to such persons or companies for each such share sold. The Company may also sell its shares directly to the public in which case it may allow a commission of up to 25% or 10¢ per share to the subscriber for each share subscribed for. There will be no commission paid to the trading directors of the Company."

Exchange Distribution

Mining companies qualify for <u>interim</u> listing upon completion of a primary distribution involving at least 250,000 shares and including a prospectus filed with the B. C. Commission. Such companies must feature 125 or more shareholders of record resident in British Columbia, together with sufficient funds to carry out the work recommended by their engineers. Regular listing status presupposes at least 200 shareowners of record. Minimum net working capital at time of listing is set at $50,000.

The VSE further stipulates that applicants for listing have (1) "up-to-date engineering reports of the companies' properties indicating feasibility

of a continued exploration program" (2) "documents showing clear title to properties, indicating that these properties were obtained legally and not at an exorbitant price from directors of the company," (3) "a reasonable escrow," and (4) "an acceptable proposal for future financing."[2]

Listed companies need not register their offering with the securities commission. According to Section 55, subsection 2b, of the 1967 Securities Act:

> "Section 37 (this section states that any primary
> stock distribution to the public by a company
> first has to be passed by the securities commission)
> does not apply to securities that are listed and
> posted for trading on any stock exchange recognized
> by the commission where the securities are distributed
> to the public through the facilities of that stock
> exchange pursuant to the rules of the stock exchange
> and the requirements of the commission and where a state-
> ment of material facts, which shall comply as to form and
> content with the regulations, is filed with and is acceptable
> to the stock exchange."

The typical VSE underwriting for regular listings involves a base amount firmly underwritten plus options that permit the underwriter to acquire additional shares at somewhat higher prices. The minimum underwriting price and amount respectively are 10¢ and $25,000 but VSE policy is - in fact - flexible. While the statement of material facts that accompanies Exchange distributions stipulates only that "shares underwritten and shares with respect to which the option may be exercised will be sold to the public through the facilities of the Vancouver Stock Exchange at market prices from time to time prevailing," VSE provisions specify that the maximum discount from market price for the underwritten price shall be 25% for shares with prices under 50¢; the allowable discount declines to 10% for shares selling above $5.00.

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[2]Speech by former VSE president Thomas A. Dohm of June 22, 1972.

Interim listings are precluded from granting options to accompany under-writings. Wherever the quantity of stock demanded substantially surpasses the available supply, however, the issuing company may be allowed to "issue directly from treasury into the market through a broker at regular commission rates, subject to appropriate filings with the Vancouver Stock Exchange."

Frequency of Exchange Distributions

During the five-year period ending December, 1969, some 255 firms (mostly mining ventures) received new financing through the facilities of the Vancouver Stock Exchange.[3] More than two-fifths obtained additional financing at least twice during this period. The breakdown of issues by number of exchange distributions is given below:

Number of Exchange Financings	Percent of Total Financings
Six	1.6%
Five	2.3%
Four	5.1%
Three	13.3%
Two	18.8%
One	58.9%
	100.0%

There were 63 underwriters. Of these underwriters, two accounted for almost one-third of the new business; the top five handled more than half; while the top ten managed slightly under three-fourths.

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[3] Approximate figure (data unavailable for two months).

ISSUER CHARACTERISTICS

The assessment of new mining distributions is complicated by the fact that it is most difficult to differentiate one mining firm from another. Major asset items include current assets (mostly, cash and related items), investments at cost (e.g., shares acquired in the transfer of claims to other mining concerns and sometimes escrowed), mineral claims, royalty interest at nominal value, mineral claims under option at nominal value, equipment at cost, and deferred expenses (covering both exploration and development costs and administrative expenses). Principal liability and net worth components comprise accounts and loans payable, deferred liabilities, and authorized and issued share capital (differentiated on the basis of those shares issued for cash and those issued for mineral claims). Deficits in recognition of costs applicable to abandoned claims are commonplace. Income statements are non-existent.

Notable Features

Especially noteworthy is the relative magnitude of deferred expenses. As illustrative, the median ratio of deferred expenses to total assets came to 73.2% for 11 VSE listings whose issues were recently underwritten. With respect to the division of deferred expenses between exploration and development and general company administration, the median ratio of exploration and development expenses to total deferred expenses for the same group came to 70.3%.

Second in the order of noteworthiness is the proportion of outstanding stock issued in exchange for mineral claims. The median ratio of such shares to total outstanding amount to 32.3% for the sample of 11 firms. Most of the shares issued for mineral claims were held in escrow.

Other Issuer Attributes

The base sample of 22 mining firms that had shares underwritten in 1965 differs from the sample of 28 concerns that offered shares for sale in subsequent years largely in the age of the company. The median age of the prior sample approximated 11 years as contrasted with about two years for the later sample. The principal effect of the greater average age appeared to be in the number of shares issued. Half of the base sample exhibited shares issued in excess of three million, as compared with about one-fifth for the later group.

Approximately half of the base sample owned shares of other mining companies, thus indicating substantial interaction. Almost half of the group had undergone recapitalization or its equivalent between 1964 and 1970, with the shareowners receiving one new share for some multiple of old shares. As many as a third (and possibly even more) of the firms were involved in the rehabilitation of previously worked properties. As of 1970, one firm was in bankruptcy, while another had had its records seized by the Ontario Securities Commission.

The more recent sample showed considerable diversity. Of 28 companies, one was already in receivership and another in voluntary liquidation by 1971. Two other firms had expressed a wish to concentrate upon industrial activities. Five concerns had changed their names, recapitalized, or merged. As in the case of the base sample, there existed substantial intermingling of company shares and claims. One company, founded in 1962, had progressed to the point of shipping copper concentrate at a capital cost in excess of $70 million (rated capacity of 30,000 tons per day).

Implication

It seems evident that the purchasers of speculative mining issues have little a priori basis for choosing one stock over another. With the possible exception of location of claims near known ore discoveries and extent of drilling for core samples, the information provided in the "statement of material facts" offers little assistance. The consulting geologist uniformly recommends that more exploration activity be undertaken. The auditor commonly stipulates that

> "The company is in the exploration and development
> stage, and accordingly all the costs relating to
> mineral claims in good standing owned by the com-
> pany have been deferred. Recovery of deferred ex-
> penditures of ____ and mineral claims of ____ is
> dependent upon achievement of a level of operations
> which would permit such recovery. The eventual
> outcome cannot be determined at this time."

On the slightly positive side, shares given in exchange for mineral claims are not permitted to compete initially in the market with shares offered for cash. Over the four-year period commencing January, 1966, some two-thirds of the base sample that featured escrow accounts at the outset had their accounts released entirely; an additional one-fifth obtained a partial release.

Inasmuch as the median ratio of escrowed shares to total shares outstanding was a mere eight per cent for the base sample, the pressure placed upon the market price attributable to their release was moderate at worst.

It further appears that, while the grass roots exploration activity undertaken by the VSE group is rather haphazard, a substantial portion of the funds obtained by such mining ventures does flow through to exploration. A median ratio of general administration expense to total deferred expense that approaches 30% does not seem excessive. Queries may, of course, be raised as to the manner in which costs are allocated.

PERFORMANCE

If appropriate at all, Mr. Tetley's analogy of trading in stocks through the Canadian Exchange to playing a church-basement bingo game is equally applicable to the VSE.[4] His underlying proposition is (or "was" before the episode with Pan American Mines) that "If the rules are fair and you don't win the color TV, you don't criticize the Roman Catholic Church." Since the investor's expected gain or loss in the securities market is not ordinarily destined for charitable purposes, however, meaningful questions arise as to the size of the house's cut and as to the legitimacy of the rules in the light of the media traded.

The focus of this section is upon expected gains or losses achieved by buying and selling speculative mining shares. The matter of fairness will be treated subsequently.

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[4] While the analogy to bingo is attractive, it may not be especially accurate. The Church or "house" establishes the prizes before the fact, and its "take" depends upon the number of paying players. Mr. Tetley is Minister of Financial Institutions for Quebec Province.

Performance Versus Number of Underwritings

Were the new financing process rational in the traditional sense, funds might be expected to flow in the direction of the better performing firms. To the end of establishing whether such is the case on the VSE, market performance and frequency of new financing were compared for all 1965 VSE mining listings whose prices were still quoted in May, 1972; the number of such firms was 37. Taken together, the 37 mining firms in question averaged two underwritings per firm for the period 1965 through 1969 and exhibited mean and median price relatives (ratios of prices for May 1, 1972 to prices for December 31, 1965) respectively of .71 and .43.

The results, shown in Table 1, belie the presence of any positive association between longer-run performance and frequency of financing. No consistent relationship is visible between number of underwritings and median price relatives. If the emphasis is placed upon mean, as opposed to median, values, frequency of financing seems to be inversely related to price performance.

The findings can be rationalized - perhaps - on the grounds that successful ventures obtain financing by other means. Placer Development financed and developed the Gibraltar in return for a 71% ownership interest. Subject to the outcome of court action by Teck Corporation, Placer - through its Canex subsidary - may assume responsibility for development of Afton's copper prospect in return for a prospective 30% interest. Numerous parallel cases, e.g., Leemac-Western Mines, Dolly Varden - New Jersey Zinc Exploration, and Columbia River Mines - Copperline Mines, can also be cited.

Table 1.   Distribution of Interperiod Mean and Median Price Relatives by
Number of New Underwritings.*

Number of New Underwritings	Number of VSE Listings	Interperiod Price Relative**	
		Mean	Median
6	1	.30	.30
5	2	.35	.35
4	4	.66	.67
3	8	.31	.23
2	7	.68	.49
1	8	1.11	.53
0	7	1.04	.53
2	37	.71	.43

*A few new issues are missing.

**End of 1965 through May 1, 1972.

Source: VSE Monthly Review.

Sample Behavior

Although hardly surprising, the post-offering price performance of the sample VSE listings, shown in Table 2, is most interesting. During the initial quarter in which the underwriting was undertaken, the investor drawing new issues at random stood about a three-fifths probability of some _gain_ (before commission and taxes) in the case of the base sample, as contrasted with a 45:55 chance of some gain with respect to the added sample.

Were the new issues acquired at the price to the issuer marked up by one-third to reflect the underwriter's discount (and assuming that price was obtained in the market), the likelihood of some capital gains, if held to the end of the quarter in question, was less than that reflected in the quarter-to-quarter results. The odds remained better than 50:50 for the base sample, but dropped to three-tenths for the added sample.

Performance in subsequent periods was increasingly unimpressive. Price relatives in the second post-offering quarter revealed a mere one-sixth likelihood of gain for drawings from the base sample, while corresponding opportunity for gain was somewhat less than 50:50 in the case of the added sample.

Comparisons of the 12-month post-offering relatives with their three-month counterparts indicated nine-month _losses_ in roughly five-sixths of the instances for both the base and added sample. What is more, the price declines continued in most cases, as reflected in the difference between the over-all price relative and its corresponding 12-month figure.

The divergent price behavior noted above is consistent with the hypothesis that insiders (promoters) or underwriters endeavor to _control_ price performance durng the underwriting interval. The insider trading activity of Morris Black in the stock of Slocan Development Corporation (formerly, Slocan Ottawa Mines)

outstanding) was 1.09. With initial shares outstanding as the sole weighting device, the ratio became .95. Inasmuch as the latter weighting procedure elimi- nates the market-value effect of shares subsequently issued for cash (as well as for other assets), the ".95" figure is presumed to be the more relevant measure.

Numerous qualifications might well be raised to the preceding approach. The selection of beginning and terminal dates is, for instance, arbitrary.[7] The use of either weighted or unweighted share prices to measure intrinsic values is also suspect. The burden of proof nonetheless appears to rest with those who argue that the process is highly productive.

Flow Through to Exploration

Prospects for positive returns on new dollars invested in mining ventures ultimately depend upon (1) the quality of the mineral claims involved and the nature of the exploration activity, and (2) the fraction of the investor's dollar that flows through to exploration activity. Little need be said about the quality aspect, other than to underline the concern over promoter integrity. The flow-through question is, however, susceptible of some analysis.

With certain exceptions noted below, the underwriters or agents distri- buting shares siphon off one-fourth of the funds received from the sale of new issues. Exceptions include (a) initial sales by directors before the venture goes public, (b) underwritings at share prices in excess of 50¢, in which the authorized commission is scaled down, (c) non-underwritten sales of stock by VSE interim listings, and (d) subsequent exercise of options acquired in con- nection with the underwriting of listed stocks. It is also quite possible that the share price prevailing in the VSE market at time of distribution will give rise to a larger or smaller realized underwriting commission than antici- pated.

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[7] Note, however, the consistency of results between the base and added sample.

Table 2. Pre-offering and Post-offering Price Performance for the Base and Added Sample

Company	Date of Underwriting	Pre-offering Price Relative (Three Months)	Post-offering Quarterly Price to 4/3 (Underwriting Price)	Post-offering Price Relatives				
				1st 3 Mos.	2nd 3 Mos.	Six Mos.	12 Mos.	Over-all
		Base Sample						
Arlington	10/65	.80	1.90	1.75	1.08	1.89	1.09	.61
Blue Star	1/65	.86	.75	.83	.67	.56	.78	.72
Cassiar C.	1/65	-	.95	1.09	.75	.81	.50	.33
Crown Sil.	6/65	1.00	.69	.89	1.09	.96	.92	.65
Croydon	10/65	.51	3.31	8.02	.99	8.00	2.74	.91
Copper Soo	10/65	.57	1.46	1.95	.75	1.45	1.00	.45
Can-Amer.	4/65	.55	.55	.94	.74	.73	.67	.56
Galaxy	12/64	3.28	1.98	1.21	.53	.64	.65	4.24
Gem Expl.	12/64	-	1.08	.90	.70	.63	.50	.15
Jericho	5/65	1.03	1.03	1.00	.84	.84	.68	.32
Kamloops	11/64	1.38	1.65	1.43	.94	1.33	1.65	.27
Madrona	11/65	-	.75	.75	.58	.44	.83	.22
Mid-West	12/65	3.50	1.88	.99	.68	.67	.77	.10
N. W. Vent.	2/65	.81	.79	.98	.78	.76	.71	2.86
Northlodge	10/65	2.05	.57	.67	.73	.49	.56	.38
Norgold	11/65	1.06	.90	2.12	.84	1.76	1.24	.35
Orecan	11/65	-	1.58	1.53	.81	1.24	.42	.42
Peel Res.	11/65	1.36	1.20	1.27	.75	.95	.69	.84
PCE Expl.	1/65	1.03	.60	1.09	.79	.87	1.00	3.36
Quatsino	11/65	.94	.90	1.72	.71	1.21	1.43	.79
Texore	12/64	1.23	.72	.80	.54	.43	.61	.24
Royal Am.	10/65	1.00	1.50	2.00	1.00	2.00	2.04	1.00
Slocan	11/65	.89	1.16	1.07	.98	1.05	.43	1.21
Sileurian	6/65	2.00	1.84	1.02	1.02	1.02	1.00	.19
		Added Sample						
Aabro	11/69	-	.54	n.a.	n.a.	.60	.47	.38
Ajax Merc.	5/68	-	.81	n.a.	n.a.	n.a.	n.a.	.33
Alvija	10/69	-	.94	1.00	1.10	1.10	.34	.16
Buchanan	5/66	.66	.61	1.02	.70	.71	.43	.27
Buval	3/69	-	.78	.49	.42	.21	.19	.12

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Table 2 (continued)

Added Sample (cont'd)

Company	Date of Underwriting	Pre-offering Price Relative (Three Months)	Post-offering Quarterly Price to 4/3 (Underwriting price)	Post-offering Price Relatives				
				1st 3 Mos.	2nd 3 Mos.	Six Mos.	12 Mos.	Over-all
Can. Fort	3/67	1.29	.60	.78	1.22	.95	.50	.78
Cambridge	2/69	-	1.29	1.51	.91	1.37	1.26	1.09
Carolin	8/69	-	.88	1.00	.71	.71	.94	.71
Casino	12/67	.90	2.12	1.98	1.11	2.19	1.63	1.57
Giant Expl.	9/68	1.00	1.11	1.21	1.15	1.40	.98	1.12
Gibraltar	10/68	-	1.18	2.54	1.42	3.59	6.34	11.00
Gradore	10/66	.72	n.a.	.64	.96	.61	.50	.31
Gunn	8/69	-	1.83	2.09*	.96	2.00	1.26	.49
Hud. Bay Mtn.	4/68	4.33	.96	.87	1.29	1.11	.96	.15
Hart Riv.	11/68	-	.92	1.02*	.79	.80	.54	.07
Interp. Sil.	4/69	-	.74	-	.78	.58	.31	.06
Jason	1/69	-	.54	n.a.	n.a.	n.a.	n.a.	.07
Juniper	5/69	-	1.13	.78	.71	.56	.24	.21
Mariner	5/67	1.78	1.17	1.07	.56	.60	.77	3.41
Nadina	3/66	-	.70	.64	1.12	.72	.71	.41
Oro	9/67	-	1.00	1.28	1.20	1.52	1.18	.36
Ramid Res.	3/69	-	.83	n.a.	n.a.	n.a.	n.a.	.18
Pathfinder	3/69	-	.69	.82	1.09	.85	.53	.89
Silver Arr.	8/66	.53	.53	.67	.95	.63	.24	2.54
Sunrise	5/69	-	.72	.87	.81	.71	.50	.40
Tremar	11/69	-	.48	.86	.56	.48	.48	.48
Vargas	6/69	-	.53	.94	1.13	1.05	.63	.27
Venus	1/68	-	1.18	1.38	1.34	1.85	1.73	.48

*Succeeding quarter.

Source: Financial Post.

Of these departures from the basic one-fourth, only options deserve extended comment. Since they need not be exercised if share prices remain below option prices, options dilute the stockholder's potential profit at no risk to the option holder. The potential dilution for the base sample - measured by the median ratio of option shares to shares outstanding - was .19.

As evidenced by Table 3, the profits obtained through the exercise of options can be significant. The over-all ratio of options profits (as estimated) to the base dollar amount underwritten came to about three-tenths for the base sample of mining firms. As a fraction of cash received by the firm through the exercise of options, option profits were almost two-thirds. As a proportion of the total cash received by the sample firms (that is, the base amount plus the cash from exercised options), option profits amounted to one-fifth.[8]

Given the apparent magnitude of option profits, the presumption that one-fourth constitutes the average share of new money (destined for mining ventures) accruing to the distributors of such shares seems conservative.[9] Taken together with the previously mentioned median ratio of exploration and development expense to deferred expense, which approximated seven-tenths, the supposed one-fourth produces a flow through to exploration of 52.5¢ on each dollar advanced. Should this figure bear a semblance of realism, the return on each dollar that ultimately reaches the exploration stage would need to be exceptionally high in order to provide an acceptable return on the shareholder's investment.

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[8] Option profits for each firm were computed by multiplying the number of optioned shares by the difference between the closing price for the quarter nearest the option date and the option price. Total profits were obtained by summing across all firms. The possibility of hedging against short positions was ignored.

[9] Options were defended on the grounds that they augmented the supply of stock in the event of substantial imbalances between quantity demanded and available supply.

Table 3. Estimated Option Profits for the Base Sample.

Company	Number of Options		Base Amount	Ratio of Market to Option Price				Option Profit	Potential Dilution
				1st	2nd	3rd	4th		
Arlington	700,000	sh	$75,000	1.68	1.50	1.03	1.58	$112,000	.25
Blue Star	600,000	"	60,000	*	*	*	*	-	.14
Cassiar C	300,000	"	27,500	1.28	*	-	-	7,500	.07
Crown Sil	800,000	"	25,000	*	*	*	*	-	.19
Croydon	400,000	"	80,000	4.40	3.50	1.00	*	261,000	.21
Copper Soo	300,000	"	30,000	1.56	*	-	-	21,000	.07
Can-Am P	400,000	"	30,000	*	*	-	-	-	n.a.
Galaxy	800,000	"	140,000	1.24	*	*	*	34,000	.19
Gem Exp	750,000	"	45,000	*	*	*	*	-	.23
Jericho	200,000	"	27,000	*	*	-	-	-	.04
Kamloops	800,000	"	40,000	1.65	1.88	1.46	1.00	94,000	.35
Madrona	200,000	"	150,000	*	*	-	-	-	.10
Mid-West	800,000	"	55,000	*	*	*	1.40	40,000	.37
N.W. Vent.	800,000	"	40,000	*	*	*	*	-	.23
Northlodge	400,000	"	80,000	*	*	-	-	-	.14
Norgold	175,000	"	52,500	*	-	-	-	-	.03
Orecan	600,000	"	67,500	1.38	1.90	1.28	*	118,500	.23
PCE Res	300,000	"	60,000	*	*	*	-	-	.06
Peel Res	400,000	"	30,000	1.20	*	-	-	8,000	.12
Quatsino	400,000	"	40,000	*	*	-	-	-	.14
Texore	800,000	"	90,000	*	*	*	*	-	.45
R. Am P	200,000	"	150,000	*	*	-	-	-	n.a.
Slocan O	400,000	"	40,000	1.55	1.35	1.12	*	45,000	.28
Sileurian	450,000	"	30,000	2.40	1.96	1.63	1.49	102,000	.19
			$2,904,500					$843,000	

*Less than one.

Source: Various.

INSIGHTS INTO INVESTOR BEHAVIOR

In view of the substantial likelihood of negative returns, it becomes relevant to speculate about the attitudes and preferences of investors in speculative mining shares. Performance measured on an ex post basis suggests that the standard assumption of risk aversion may be inapplicable in this context. If - as indicated by the salesmen of such securities - the same parties keep returning to the market, they must possess conveniently short memories, erroneously assess the odds, or be sufficiently intrigued in the skewness in individual returns to compensate for deficiences in the average return (or, first moment of the distribution). The "oft recommended" strategy of taking losses expeditiously and liquidating winners sequentially may have some bearing on both memories and attitudes.

In the absence of adequate investor sampling, attention is directed to such observable features as (1) the amount invested, (2) share turnover, and (3) the character of net returns to investors. Both the stakes involved and the holding period (as reflected in share turnover) are crucial to the interpretation of net returns.

Dollars Invested

For insight into the magnitudes at risk, individual trades were distributed by size of transaction for seven members of the base and added samples during the last quarter, 1968 (twelve Wednesdays). The results, given in Table 4, support the notion that the dollar amount placed in any single security is usually maintained at a modest level. Each of the stocks sampled showed bi- or multi-modal distributions, with the modal values (that is, shares transacted times price) most frequently in the neighborhood of $500 or $1,000.

Table 4. Size Distribution of Individual Trades: Twelve Wednesdays, Last
Quarter, 1968.

(Seven Companies)

Size of Trade (Shares)	Percentage Breakdown for:						
	Arlington	Blue Star	Galaxy	Nadina	North West Ventures	Oro	Venus
Under 100	-	-	1.5%	1.8%	-	-	2.1%
100-300	3.0%	1.4%	21.0	52.8	18.3%	-	41.4
300-600	51.6	43.0	32.8	27.7	47.4	39.3%	33.2
600-900	-	-	4.2	5.0	4.9	12.7	4.7
900-1,500	32.3	31.7	30.0	9.5	21.4	31.4	12.7
1,500-3,000	10.1	21.4	7.0	3.2	6.0	12.7	5.0
3,000 and over	3.0	2.5	3.5	-	2.0	3.9	.9
	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Number of Trades	472	196	1,367	220	999	102	419
Price Range	.42- .74	.10- .15	.51- 1.85	2.01- 2.75	.63- 1.60	.51- .75	1.73- 2.90

Source: Vancouver Stock Exchange, Official Daily Bulletin.

In the post-1968 period, it is possible that the average transaction size (dollarwise) has increased somewhat. Mean transaction values for all mine stocks, taken together, for two days in early May, 1972, approximated 1,000 shares and $1,000.[10]

In any case, the dollars at risk surpass (1) the stakes in the normal poker game, (2) the cost of sweepstate tickets, and (3) the price of lottery tickets, but fall somewhat short of the typical dollar transaction in industrial stocks. The latter ranged between $1,500 and $2,000 for the two days sampled in early May, 1972. Because of its intermediate status (dollarwise), the market for mining share should be of special interest to those interested in the study of risk-taking.

Share Turnover

As shown by Table 5, share turnovers -- that is, shares traded divided by shares outstanding -- in excess of one are commonplace for both the base and added samples. Differences between yearly turnovers and annualized values for high quarters also point to notable intertemporal variations in speculative interest.

Sizable though they appear to be, the turnover figures are downward biased by the inclusion of escrowed shares as a component of shares outstanding . The fact that such shares cannot be traded argues for their exclusion from the available floating supply of stock. For the base sample, the median ratio of escrowed to issued shares was .08, as of late 1966. For the added sample, the corresponding figure was .20, as of early 1970.

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[10]Biases are introduced to the degree that the investor invests sequentially and subdivides his order among different brokers.

Table 5. Selected Share Turnovers for the Base and Added Sample.

Company	Year	Share Turnover Year	High Qtr[1]	Company	Year	Share Turnover Year	High Qtr[1]
			Base Sample				
Arlington	1968	1.77	3.09	Copper Soo	1967	.62	1.22
Blue Star	"	.58	1.53	Galaxy	1967	2.60	4.48
Cassiar C.	"	.17	.44	Gem Expl.	1968		
Crown Sil.	"	.89	1.60	Jericho	"	.73	1.97
Croydon	"	.46	.82	Kamloops	"	.58	1.51
Madrona	1967	2.57	6.00	Orecan[2]	1967	1.92	3.39
Mid-West	"	1.79	3.18	Peel Res.	1968	1.28	3.81
N.W. Vent.	1968	3.02	6.75	Quatsino	"	.62	1.60
Northlodge	"	n.a.	n.a.	Texore	"	-	-
Norgold	"	.03	.06	PCE Expl.	"	.03	.04
Slocan O.	"	.60	1.38	Sileurian	"	.59	.97
				Mean		1.11	2.31
			Added Sample				
Aabro[2]	1969	1.33	1.71	Cambridge	1969	.30	.32
Ajax Merc.[2]	1968	.81	1.04	Carolin[2]	"	.41	.41
Alvija	1969	.57	.73	Casino Sil	1968	4.06	9.60
Buchanan	1968	1.65	2.58	Giant Exp.	"	1.14	1.78
Buval	1969	1.71	2.26	Gibraltar	1969	2.15	2.96
Gradore	1969	.13	.20	Jason	1968	.25	.33
Gunn	"	3.95	5.26	Juniper	"	.98	1.32
Hud. Bay M	1968	1.97	2.88	Mariner	1967	.44	1.21
Hart Riv.[2]	"	.27	.27	Nadina	1968	.44	.77
Interp. S[2]	"	.49	.56	Oro	"	1.86	2.91
Ramid Res.	1969	.48	.71	Tremar[2]	1969	2.12	2.12
Pathfinder	"	.52	.53	Vargas	"	1.70	2.30
Silver A.	"	2.70	3.28	Venus	"	.38	.41
Sunrise	"	.30	.35	Mean		1.23	1.81

[1]Annualized.

[2]Less than 12 months, annualized.

Source: Vancouver Stock Exchange, Monthly Review.

With or without adjustment for escrowed shares, the range of variation in
share turnovers is such that our beliefs as to investor behavior should be ex-
tended to encompass both active and passive speculation. The former relates to
the acquistion and disposition of active stocks; the latter, whether voluntary
or involuntary, to the holding of inactive stocks until the next flurry of specu-
lative activity.

Consistent with the observed share turnovers for the more active stocks,
quarterly return relatives - shown in Appendix Table A - are taken to be as satis-
factory a measure of return possibilities to the active investor as is available.
Longer period returns to less active investors can be derived by multiplying the
appropriate sequences of quarterly return relatives.

Net Returns to Investors

The phenomena of modest dollar investments and rapid share turnover can now
be juxtaposed against the character of returns realized by buyers of mining stocks.
Inasmuch as it has already been established that investors in the VSE market lose
on the average, the focus of this subsection is - with three caveats - upon the
shape of prospective returns.

The first caveat relates to the significant impact of commissions upon re-
turn expectations. In 1966, for instance, two way commissions amounted to 5% and
4% respectively on 1,000 share transactions in shares priced at 10¢ and 75¢. Given
a share turnover of four and continuously invested funds, the corresponding annualized
costs became 20% and 15%.

Return possibilities were further diminished by the bid-ask differential
and by an apparent inability to dispose of sizable orders without further price
concessions. As evidenced by Table 6, median discounts (from asked prices) re-
quired of those liquidating mining shares priced under 20¢ exceeded 12%. Median
discounts associated with shares priced between 20¢ and $1.00 typically surpassed
4%. Stocks in the course of primary distribution featured comparatively narrow
spreads.

Table 6. Cumulative Percentage Distributions of Ratios to Asked Price of the Difference Between Bid and Asked Price, for VSE Mining and Interim Listings.

(May 4, 1972)

Ratio of Difference Between Bid and Asked to Asked Price	VSE Stocks Not in Course of Primary Distribution with Prices of (cents):				VSE Stocks in Course of Primary Distribution with Prices of (cents)			
	Under 20	20-50	50-100	100 & over	Under 20	20-50	50-100	100 & over
			Regular Listings					
0-4%	-	22.8%	40.0%	61.2%*	-	26.0%	50.5%	100.0%*
4-8	25.5%	54.4*	68.0*	72.3	63.6%*	70.4*	100.0	
8-12	46.2	80.8	84.0	91.7	90.9	88.9		
12-16	71.2*	89.5	88.0	97.2	90.9	100.0		
16-20	80.8	96.5	88.0	100.0	100.0			
20-24	88.5	96.5	100.0					
24-48	90.4	100.0						
28-32	96.2							
32-36	96.2							
36-40	100.0							
Number	52	57	25	36	11	27	4	1
			Interim Listings					
0-4	-	6.5%	25.0%	57.1%*	-	25.0%		100.0%*
4-8	11.8%	25.9	62.5*	85.7	42.9%	66.7*		
8-12	47.0	48.4	75.0	100.0	57.2*	75.0		
12-16	52.9*	64.5*	81.3		57.2	91.7		
16-20	58.8	71.0	93.8		85.8	100.0		
20-24	76.5	80.7	100.0		100.0			
24-48	82.4	83.9						
28-32	94.2	93.6						
32-36	97.1	96.8						
36-40	97.1	96.8						
40-44	100.0	96.8						
44-48		96.8						
47 & over		100.0						
Number	34	31	16	7	7	12	0	1

*Location of median value.

Source: Official Daily Bulletin, Vancouver Stock Exchange

The third caveat concerns leverage possibilities, designed to magnify possible returns. Present margin provisions permit securities selling at one dollar or more to be carried at a 50% margin. Shares priced at less than one dollar cannot be margined.

Cumulative distributions of quarterly return relatives, shown in Table 7 for 16 members of the base sample whose share prices were reported throughout the sample period, illustrate the possibilities for extreme gains or losses within individual quarters.[11] Share purchasers choosing not to diversify and drawing at random stood a 2.4% chance of doubling their money or better and a 4% likelihood of a real bonanza (see the over-all cumulative distribution). Share purchasers choosing to diversify (which seems somewhat irrational, but note the moderate transaction on size) stood a 3.9% chance of doubling their money, but no possibility of a bonanza.

When regressed against the return relatives for the base metals component of the Toronto Index, the return relatives for the base sample featured universally positive regression coefficients, but the scatter was notable, and few $\overline{R}^2$s exceeded one-tenth.[12] The over-all relation (involving averages of quarterly relatives) was

$$V = -.6 + 1.7 \ T \ (\overline{R}^2 = .12)$$

where V refers to the quarterly average of sample relatives and T represents the Toronto base metals relative. The association between the base metals relative (T) and the Toronto Industrial Index relative (I) was

$$T = .35 + .65I. \quad (\overline{R}^2 = .46).$$

Investors that choose to diversify in the VSE mining market thus benefit from successful efforts at forecasting the Toronto <u>base metals</u> group behavior. Note, however, the mediocre R^2.

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[11]Given the peculiar nature of the distributions, cumulative distributions were judged preferable to 2nd and higher moments for descriptive purposes.

[12]Cf. Table 8.

Table 7. Cumulative Distributions of Quarterly Price Relatives for Sixteen Base Sample Firms.

Cumulative Percentage of Price Relatives Through

Company	.3-.4	.4-.5	.5-.6	.6-.7	.7-.8	.8-.9	.9-1.0	1.0-1.1	1.1-1.25	1.25-1.5	1.5-2.0	2.0-2.5	2.5-3.0	3.0-4.0	8	25
PCE Exp.	3.7	7.4	11.1	14.8	22.2	25.9	33.3	48.1	66.7	81.5	96.3	100.0				
N.W. Vent.		3.7	3.7	3.7	25.8	44.4	63.0	74.1	85.2	92.6	96.3					100.0
Slocan O				8.0	36.0	52.0	68.0	88.0	96.0				100.0			
Peel Res			3.7	3.7	25.8	51.8	55.5	70.3	88.9	97.3	100.0					
Quatsino	3.7				7.4	25.9	59.3	74.1	85.2	96.3	100.0					
Croydon		3.7	7.4	18.5	18.5	33.3	48.1	70.3	88.9	96.3					100.0	
Arlington					22.2	37.0	51.8	77.8	88.9	96.3	100.00					
Sileurian			7.4	14.8	25.9	37.0	55.6	66.7	88.9	92.6	96.3	100.0				
Jericho				14.8	18.5	44.5	63.1	85.2	92.6	92.6	96.3	100.0				
Norgold			3.7	3.7	18.5	37.1	51.9	74.0	92.6	96.3	96.3	100.0				
Cassiar C				3.8	23.0	38.4	50.0	77.0	92.4	96.2	96.2	100.0				
Texore			7.4	11.1	14.8	25.9	51.9	74.1	85.2	96.3	100.0					
Blue Star				11.1	22.2	44.4	66.6	77.7	81.4	92.5	100.0					
Mid-West			3.7	14.8	33.4	55.5	74.1	77.8	88.9	92.6	92.6	96.3	96.3	100.0		
Kamloops				11.6	19.3	42.3	53.9	76.9	84.6	96.2	100.0					
Gem Exp.	3.7	7.4	11.1	18.5	33.3	51.9	66.7	74.1	81.5	92.6	96.3	100.0				
Over-all	.7	1.4	3.7	9.5	21.2	39.4	56.0	72.8	86.4	94.1	97.6	99.0	99.4	99.6	99.8	100.0
Composite					7.7	38.4	57.6	72.9	84.5	92.2	96.1	100.0				

Source: Financial Post

Figure 1

a. Over-all

b. Composite
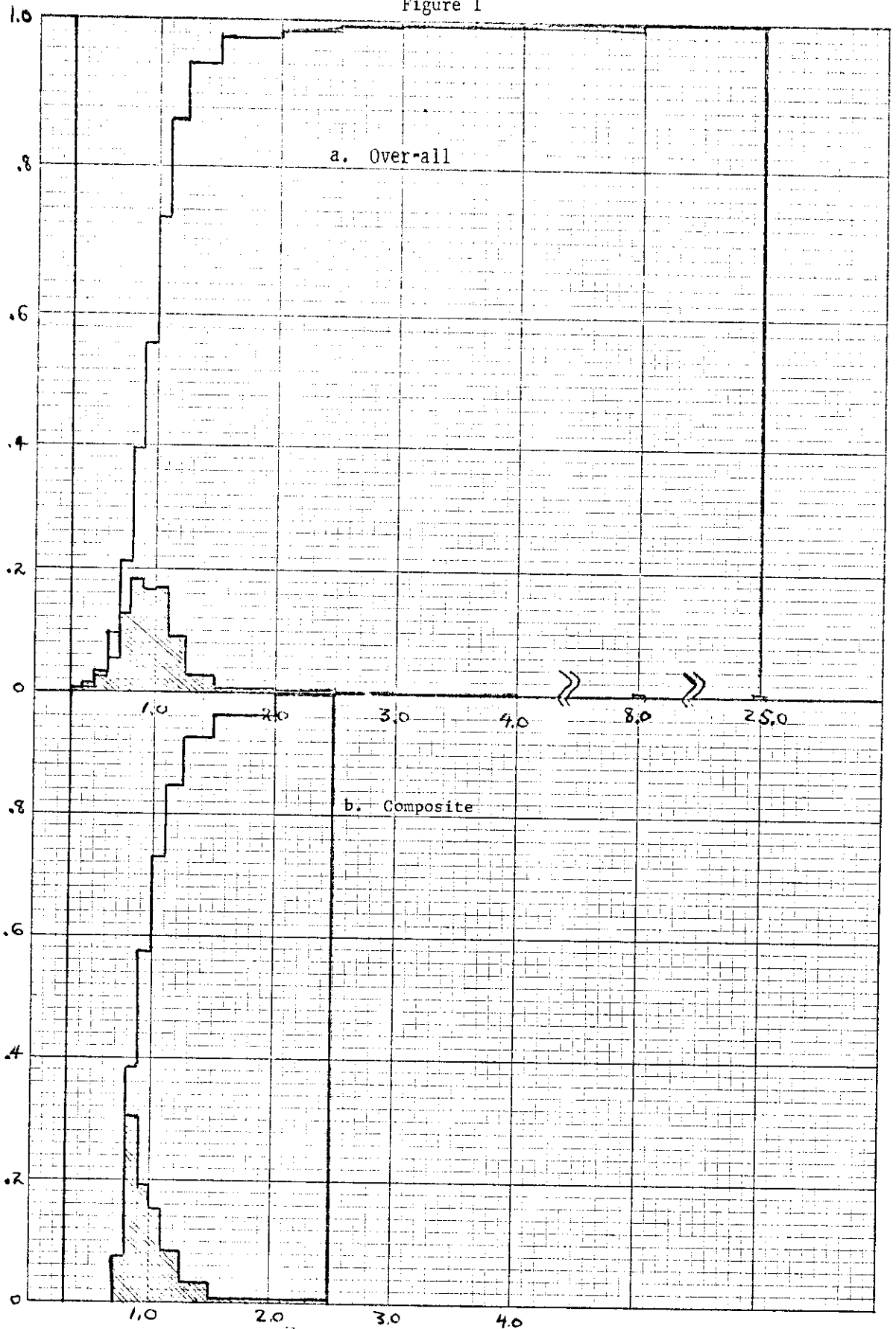
Table 8. Regressions on the Base Metals Index Relatives of Quarterly
Relatives for Twenty-one Firms in the Base Sample.

Company	Regression Constant	Regression Coefficient	$\overline{R}^2$ *
Arlington	.172	.823	.07
Blue Star	-.109	1.094	.08
Cassiar C	.309	.678	.03
Crown Sil	-.394	1.392	.15
Croydon	1.074	.144	.00
Copper Soo	-.186	1.149	.06
Galaxy	-4.613	5.788	.33
Gem Exp	.588	.413	.00
Jericho	-.750	1.708	.14
Kamloops	.421	.547	.03
Madrona	.597	.388	.01
Mid-West	-.537	1.567	.04
N.W. Vent.	-12.195	14.036	.05
Norgold	.379	.610	.02
Peel Res.	.405	.559	.03
PCE Exp	-.889	1.995	.14
Quatsino	.771	.243	.01
Texore	.791	.204	.00
Royal-Am P	1.693	-.620	.01
Slocan O	-.547	1.595	.10
Sileurian C	-.325	1.331	.09
Average	-.653	1.702	.12

*Adjusted for degrees of freedom.

Source: Various.

CONCLUDING REMARKS

The foregoing analysis suggests that procedures for the financing of grass roots exploration activity leave something to be desired. At the industry level, the seemingly haphazard character of the process and the comparatively small fraction of invested funds that reaches the exploration stage are matters of concern. At the investor level, it is evident from the data on performance that the returns achieved are not commensurate with the risks assumed, as measured by the volatility of returns.

On behalf of promoters and underwriters, it may be argued that (1) substantial selling and related effort is required to raise new money for mining exploration and such effort warrants adequate compensation, and (2) the variability of the underwriting business justifies high rewards in favorable market environments. The high prices paid for such promotional and underwriting services nonetheless render suspect the allocational efficiency of the new issue process. Funds that finally reach the exploration stage must be inordinately productive to support the deadweight of funds spooned off by intermediaries. Alternative means of allocatine resources to mineral exploration thus merit attention.

The evidence suggests that promoters and underwriters are motivated to go beyond the act of informing prospective investors as to available merchandise and to influence share prices at time of primary distribution. On the average, mining stocks performed best during the quarter in which the underwriting occurred. The spread between bid and offer was also comparatively narrow for stocks in course of primary distribution. In one instance for which information was available, promoter-sponsored trading accounted for more than half of total share transactions in the month of distribution.

The investor's position in the scheme of things is most interesting. As evident from share transaction and turnover figures, the typical investor emphasizes speculative gains, but may well diversify (rather than plunge). Despite notable skewness, however, repeated trials (or investments) almost certainly ensure losses to outsider players. Our conclusion is that either investors consistently misassess the odds or nonmonetary considerations enter the picture.

Appendix Table A

1. Price Relatives: Base Sample

Quarterly Price Relatives for:

	1964	1965				1966				1967				1968				1969				1970				1971			Overall
	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	Total
Arlington Sil	-	1.00	1.07	.80	1.75	1.08	.79	.78	.77	1.43	.74	.97	1.10	1.09	.89	1.15	1.37	1.02	.94	.92	1.00	.78	.81	.90	.78	1.11	.88	1.00	.61
Blue Star	.86	.83	.67	.95	1.47	.97	1.78	.84	.75	.87	.77	.95	1.00	1.00	1.00	1.27	1.37	.70	.95	.82	1.16	.70	.81	1.00	1.00	.93	.86	.67	.22
Cassier Cons.	-	1.09	.75	.62	1.38	.96	1.14	.75	1.00	1.23	.91	.70	1.00	1.07	.94	1.00	1.10	2.00	.70	.83	.87	.60	1.00	1.00	1.00	.93	.80	1.05	.33
Crown Silver	1.08	.93	1.00	.89	1.09	1.04	.85	.73	1.00	1.00	.83	1.43	.65	.92	1.46	1.00	1.00	.85	.71	.82	.89	.71	1.04	1.22	.71	1.04	.80	1.05	.65
Croydon	.86	1.10	1.44	.51	8.02	.99	.34	1.00	.83	.80	.88	1.06	1.14	1.19	1.06	.62	1.22	1.29	1.00	.86	.83	.61	.98	1.16	.69	.98	.93	1.00	.91
Copper Soo	1.24	1.08	.90	.57	1.95	.75	.79	.87	1.00	1.30	.46	1.04	.76	1.05	1.10	.82	1.22	1.23	.89	.88	.86		.61		.69		.93	1.00	
Can-Amer. Pet.	.55	.94	.94	.79	1.00	.91	1.00	.90									.86												.45
Galaxy Copper	3.28	1.21	.53	1.10	.92	.87	.81	.67	.73	1.67	1.02	1.78	.73	.69	1.21	1.90	3.28	1.12	.49	.68	.81	.64	.83	1.00	.83	.90	1.00	.72	.56
Gem Explor.	-	.90	.70	.56	1.44	.93	.83	.73	.83	1.40	.75	.90	.84	2.88	1.11	1.53	1.26	1.29	.80	.80	.94	.62	.94	1.06	.94	2.00	.85	.98	4.24
Jericho	.95	1.03	1.00	.83	.81	1.00	.96	.63	.80	1.13	.74	1.10	1.09	.67	1.06	.65	.93	1.93	.87										.15
Kamloops	1.38	1.43	.94	.80	1.54	.69	1.00	.60	.73	1.03	.84	.70	.95	1.00	1.00	1.15	1.30	1.33	1.35	.63	.83	.83	1.00	1.00	1.00	1.20	.93	.82	.32
Madrona	-	-	-	.80	-	.75	.58	1.07	1.77	.41	.82	1.05	1.39	1.31	.56	1.73	1.05	1.05	.67	.90	.69	.69	.97	1.17					.27
Mid-West	4.38	.77	.97	.77	3.50	.99	.68	.87	1.32	1.05	.69	.76	.60	.63	1.11	.86	1.11	1.20	.92	.82	.89	.72	.89	.90	.71	2.03	.71	.58	.22
N.W. Ventures	.81	.98	.78	.75	1.25	.90	.96	.96	.80	1.00	.70	1.71	1.17	.82	1.14	1.00	25.00	1.13	.75	.86	.49	.83	1.32	.88	.58	.76	.10
Northlodge	-	-	-	2.05	.67	.73	1.50	.76	.88	.77	.70	1.71	.71	.82	1.14	1.00	1.03	1.13	.95	.95	.83	1.32	.76	2.86
Norgold	-	1.06	.89	1.06	2.12	.84	1.27	.56	.91	.95	.83	1.13	.88	1.20	1.06	.74	1.14	1.13	1.11	.70	1.07	.71	.90	1.00	.89	.75	1.00	.38
Orecan	-	-	-	1.53	.81	.64	.53																						
Peel Res.	1.03	1.13	.78	1.36	1.27	.75	.89	.82	1.00	1.16	.87	1.16	.87	.96	.80	1.35	.71	.74	.51	.77	1.12	.89	.77	1.08	1.00	.89	.75	1.00	.35
PCE Explorer	1.03	1.09	.79	1.11	1.05	1.14	.98	.92	1.51	2.10	1.54	1.33	1.28	1.73	1.17	1.28	1.17	1.26	1.02	.68	.47	1.08	1.17	.77	1.06	1.53	1.00	1.60	.42
Quatsino	1.37	.90	1.11	.94	1.72	.71	1.06	1.11	1.25	.96	.83	.90	.89	1.00	1.32	1.12	1.07	.92	1.36	.96	.73	.88	.90	.83	.84	.59	.84
Texore	1.23	.80	.54	1.26	1.14	1.00	1.29	.54	1.00	1.00	.87	1.30	.81	.81	.95	.98	1.05	1.61	.94	.91	.90	.97	.70	1.24	.90	.88	.90	1.05	3.36
Royal Am. Pet.	.79	1.08	1.07	1.00	2.00	1.00	1.17	.88	1.19	.45	.78	1.27	1.28	1.00	.56	1.18	1.21	1.16	.72	.65		.97	1.00		.70	1.00	.90	.61	.79
Slocan Octava	-	-	.89	1.07	.98	.69	.60	.80	1.23	.91	1.20	.93	1.11	1.07	.91	.86	.87	.82	1.05	.85	1.24	2.64	1.04	1.25	.24
Sileurian Chief	1.30	.96	2.00	1.02	1.00	1.06	1.23	.75	1.10	1.30	1.19	.59	.63	.83	1.22	.94	1.23	1.14	.95	.79	1.70	.94	.67	.85	.82	.96	.74	.58	1.00
																													1.21
																													.19
X = .84	1.38	1.02	.89	.89	1.79	.91	.94	.82	.99	1.11	.85	1.10	.95	1.10	1.03	1.03	2.45	1.13	.85	.78	1.00	.97	.77	1.02	.89	1.28	.87	.89	.86
Mean = .835																				.78	1.00								
Median = .47																				1.00									
% Down	.38	.45	.65	.67	.09	.71	.63	.83	.50	.32	.87	.38	.62	.48	.29	.48	.10	.14	.65	.88	.41	.71	.38	.81	.56
.80 Loss																													

Appendix Table A (continued)

2. Price Relatives: Added Samples

	1966				1967				1968				1969				1970				1971		Entire Period
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	
Aabro																	.79	.76	1.25	.63	.82	.74	.38
Ajax Merc.													1.17	.95	.67	.90	.72	.92	.93	.91	1.50	.73	.33
Alvia																1.00	1.10	.56	.55	.59	1.10	1.30	.16
Buchanan	–	.66	1.02	.70	.71	.84	.96	.90	1.33	1.25	1.00	.77	1.09	.80	.85	.88	.87	.39	2.00	.65	1.54	1.43	.27
Buval															.49	.42	1.25	.74	.81	.93	.75	–	.12
Can. Fort.					1.29	.78	1.22	.77	.69	1.00	1.00	1.56	1.14	1.07	.91	1.16	.95	.83	1.00	.57	1.75	–	.78
Cambridge														1.51	.91	.85	1.08	.92	.76	.79	1.13	1.38	1.09
Carolin									1.98	1.11	.88	.90	1.37	1.13	2.03	1.00	.71	1.04	1.27	1.12	1.33	.51	.71
Casino												.85				2.53	.76	.62	.60	.67	1.15	.55	1.57
Giant		.72				.82	1.00	1.03	1.03	1.00	1.00	1.21	1.15	.75	.93	.91	.84	.82	.96	1.12	1.43	1.20	1.12
Gibraltar													2.54	1.42	1.02	1.74	1.13	.87	1.03	.85	1.62	1.05	11.00
Gradore			.64	.96							.90	.83	1.25	.92	.82	.85	1.09	.96	.70	1.25	1.10	–	.31
Gunn									4.33	.87	1.29	.90	.96	.98	.78	2.09	.96	.76	.92	.77	1.33	.80	.49
Hud. Bay Mtn.																.79	.70	.71	.90	.97	.77	.80	.15
Hart Riv.									1.02	.79	.69	.97		.73	.43	.88	.80	1.16	.53	.07			
Interp. Sil.											.78	.75		.93	.57	.88	.86	.95	.41	.0			
Jason											1.00	.61		.82	.90	1.01	1.74	.54	.30	.07			
Juniper											.78	.71		.70	.63	.82	.95	.88	1.27	.21			
Mariner					1.78	1.07	.56	1.06	1.23	1.10	1.48	1.13	.98	.66	.86	.70	1.35	1.07	1.74	2.51	–	–	3.41
Nadina	.64	1.12			1.22	.86	.45	.91	1.46	1.09	1.82	1.17	1.54	.77	.88	1.17	1.43	.45	1.02	.75	1.02	.82	.41
Oro			.81				–	–	1.28	1.20	.91	.84	1.12	.92	.66	1.05	.86	.89	1.00	1.12	.86	.58	.36
Ramid															.86	1.05	.45	1.00	1.33	.70	.93	.62	.18
Pathfinder														.82	1.09	.79	.79	.73	.91	1.50	1.78	.94	.89
Silver A.	.94	.53		.67	.95	.70	1.21	.61	1.08	1.14	.80	2.90	3.42	1.31	.85	.82	.89	1.04	.83	.87	–	–	2.54
Sunrise														.87	.81	.67	1.04	.56	1.10	.91	.75	1.47	.40
Tremar															–	–	.86	1.57	.45	.81	–	–	.48
Vargas								–		1.38	1.34	.70	1.33		.94	1.13	.38	1.57	1.10	.81	1.53	.77	.27
Venus									–					.79	.88	1.08	.92	.76	1.13	.82	.58	–	.48
Mean Z	.48	.85	.71	1.15	.95	.70	.90	.88	1.60	1.11	1.13	1.17	1.43	.97	.89	1.02	.90	.80	.99	.97	1.13	.87	1.01
Median Loss	1.00	.50	1.00	.50	.83		.50	.71	.11	.10	.36	.56	.14	.71	.83	.58	.71	.81	.56	.74	.40	.67	.75
.41																							
.75 – loss																							

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