Junior Mining Sector Capital-raisings: The Effect of Information Asymmetry and Uncertainty Issues

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While prospecting by junior mining companies (JMCs) is a vital contributor to modern wealth creation, attributes of the junior mining sector (JMS) limit JMC-fund raisings to external equity (shares). In considering responses by JMC principals to deep discounting and other JMC-investor strategies, potential responses were found to: increase returns to principals, increase JMS moral-hazard issues, and further deepen price discounts on JMC share offerings, especially IPOs. It is suggested that the attractiveness and moral-hazard consequences of these potential responses can be greatly diminished if mining-tenement fees are raised and JMC prospecting costs are allowed as an offset against those fees.

INTRODUCTION

Prospecting by the Junior Mining Sector (JMS) is a key input to renewal and growth in the mining sector which (via mineral commodities) is a major driver of the wealth that is created by manufacturing and flows on through its derivative markets. About 60 percent of Australian gold, nickel, and base metal discoveries, since the 1960s, have been attributed to JMC prospecting efforts (Geo-science Australia, per Hogan et al.,, 2002). The JMS is dominated by small firms who are vitally dependent on their capacity to raise external capital. The JMS are solely in an exploring and/or pre-mine developmental phase. Firms (involved in those activities) with one or more operating mines, are part of the senior mining sector.

However, the JMS is beset with information asymmetry and at times moral-hazard issues that, consistent with Akerlof's (1970) conundrum, drive massive discounts (i.e. 50 percent or more of intrinsic value) in IPOs and secondary equity offerings (SEOs). The fundamental issue is that, while Junior Mining Companies (JMCs) can potentially generate spectacularly massive future earnings, they are more likely to exhaust all their capital (before generating earnings) and the uncertainty is so great as to leave little means to differentiate between future winners and losers among JMCs (where JMCs are engaged in exploration and/or have undeveloped finds). If a JMC succeeds in developing a working mine, it graduates from the JMS and becomes a large mining company (LMC) in the senior mining sector. Thus, for the most part, JMCs have wonderful but highly uncertain earnings potential with little or no past or current earnings or positive cash flows to indicate their potential or to otherwise commend a given JMC or group of JMCs to

investors. The research question being considered in this paper is: How do JMC principals organize their firms, in response to strategies used by investors to value JMC share offerings?

In answering the aforementioned research question, this paper seeks to:

i) Show how JMCs transcend their generally dismal risk/return profiles and their lack of access to internally generated funds, to raise the capital they need to perform their vital link/service in the creation of wealth,
ii) Discuss the nature of information asymmetries and the associated fears issues that may rise in the JMS and how and why they drive massive discounts in IPOs and other share offerings, and
iii) Consider policies and other remedies that may mitigate the harmful effects of the information asymmetries and associated investor fears in the JMS

It is important to note that, without ongoing prospecting services from a vibrant JMS, those services would need to be done by large mining companies (LMCs) or as government public good. The rest of the paper is structured as follows: 2) The JMC business model; 3) Trade-offs and other equity market issues for JMCS; 4) Moral hazard and other opportunistic JMC-manager behaviour; 5) Conclusions.

THE JMS BUSINESS MODEL

The JMS has mostly been ignored by the literature examining the capital raising process. Specifically, that literature emphasizes firms with earnings, and/or expected earnings that can be estimated within a tolerable confidence bandwidth and the JMS business model precludes that type of analysis. Specifically, JMCs generate revenue by acquiring mineral tenements from governments (usually Federal) and either explore them for mineable deposits or hold them until prospecting by another firm (JMC or LMC) generates evidence of mineable deposits in neighboring tenements. If a tenement increases in value due to a discovery, or proximity to a discovery, its JMC owner will likely sell it on to another JMC or a LMC. Only rarely, after discovering a mineable deposit, does a JMC develop it into a major mine and grow from a JMC into a LMC. Thus, JMCs can be like financial firms who acquire and hold onto options—in some cases JMCs can earn very good returns without ever prospecting. This potential separation of rewards from prospecting effort, cost and risk creates an enormous moral hazard issue for the JMS. Specifically, without active prospecting, there is little or no means for any tenement to rise in value. However, those who incur the costs and risks of prospecting can only capture the benefits from that prospecting that accrue to their tenement(s). Gains to neighboring tenements, from that prospecting, will accrue as external benefits to the holders of those tenements. Thus, the best business model for a JMC is to acquire and sit on tenements in the hope that some other JMC will incur all the cost and risk of prospecting. Given that there are few generous fools and bankruptcy tends to thin their numbers quickly, the sit-and-wait JMC plan works best with a degree of low cunning. Specifically, firms using a strategy of *wait-for-others-to-take-the-risk* may need to spinoff and sell a subsidiary JMC to incur the costs and risks of prospecting but (that subsidiary) will have limited rights to tenements that could benefit from that prospecting (e.g. a scattering of tenements owned by the subsidiary and all or most of the surrounding tenements owned by the parent JMC). Such a structure concentrates the prospecting costs and risks in the subsidiary and concentrates potential gains from prospecting in the parent JMC.

The fears of investors, that JMC principals may exploit the potential information asymmetry, lead to deep discounting of JMC share issues and are an excellent example of the phenomena described by Akerlof (1970). Thus, as noted by Akerlof's (1970) assertion, unchecked information asymmetry can lead to behaviours with costs that are borne by all participants in the market.

JMCs must obtain funding to acquire tenements, to administer their tenements, and to prospect on their tenements for mineable deposits. If and when a JMC finds a mineable deposit on one of their tenements, they then need to acquire more funding to go through the very risky and uncertain process of early-stage development of the deposit and even more funding if they choose to develop the deposit into a viable mine. Many JMCs forego this last stage and sell the rights to their discoveries to LMCs. The potential returns to winning JMCs are massive, with their shareholders receiving multiples of their

investments of 10-fold or even several100-fold—what needs to be considered in future research is to what degree are those returns reflective of risk and effort and to what degree might they be attributable to manipulation by a few less scrupulous JMC principals.

During the vast majority of the business life of a JMC, it bleeds money and only a lucky few will ever have positive cash-flows that are of sufficient magnitude to justify either loans or an investment. Also, as Low (2011) notes, risk within the JMS is further aggravated by the cyclical nature of the mining industry. As a result, loans and other credit are rarely possible for JMCs and they must, for the most part, rely on equity funding. As an added complication, potential investors need to be convinced of the wisdom of either investing in JMCs on a portfolio basis or on a lottery basis (if investing in a single firm or tenement).

TRADE-OFFS AND OTHER EQUITY MARKET ISSUES FOR JMCS

Similar to venture capital, capital-raising for JMCs is not auxiliary to its business operations, but is a necessary precondition for any business operations to occur. Capital-raising involves treacherous tradeoffs, such as balancing the raising of funds with the risk of diluting existing equity-holders, which may off-side key market participants, whose support may be needed in future capital raisings.

Pecking order theory (Myers, 1984; Myers and Majluf, 1984) suggests that firms, unable to access internal funding, first elect to use debt, then preferred shares, then debt-convertible-to-common shares, and finally (as a last resort) equity. This is supported by Lee et al. (1996) who found that IPOs are the most expensive capital raising process, followed by SEOs, convertible bonds and, finally, least expensive, straight bonds. The JMS, given its high-risk and initial high cash-out-flow business model, is forced to seek the most costly form of financing—external equity.

Equity financing is also the quickest method for raising funds (Low, 2011). Thus the JMS is largely reliant on equity markets, and the capacity to periodically tap equity markets is vital to support ongoing business development and/or survival of these firms. Consequently, the prudential management of the capital raising process is of vital importance to a JMC; a well managed capital-raising insures the viability of the firm as a going-concern (at least until the next capital raising), and demonstrates an endorsement by the market of the company's strategy. In contrast, a poorly managed or inopportune capital-raising can inflict serious harm on a company's prospects, market standing and share price – even if there is no underlying deterioration of the firm's assets or the viability of its business plan. The history of the Australian Securities Exchange (ASX) reveals that JMS has a number of a poorly managed capital-raising and not many of those firms survived into a second capital-raising process.

These concerns, when combined with the information asymmetries and associated fears discussed in the previous section, may encourage a few unscrupulous JMC principals to organise the opportunities, costs and risks of their firms such that their interests and those of a select few are served at the expense of investors that they can attract to deviously designed subsidiaries. It is important to note that, while investors in such subsidiaries may make a fair- to-excellent return on their investment, that return may be a mere fraction of the gain that their investment created. Specifically, the principal of the JMCs may have organised their firms to maximise the external benefits of the prospecting efforts of the subsidiary and to concentrate as much of those benefits as possible into the parent and/or related firms.

IPOs, SEOs, and Share Pricing

The IPO is only the start of a JMC's close association with equity markets—as the firm seeks to raise ever more funds to sustain itself and/or grow its business and market value. Kreuzer et al. (2007) studied junior exploration floats on the ASX from 2001-06 and found that the typical JMC raised A$4 million during the IPO process, but, given an average A$2.6 million annual cash-burn rate, it usually required a fresh capital infusion within two years of listing. Thus, while industrial firms with earnings can concentrate on protecting, optimising and growing its operations earnings (confident that those efforts will be reflected in its share value), a JMC often must improve market value to acquire tenements and/or prospect for potential mineral deposits to generate earnings flows—all this must occur after it has sought

its capital infusion and before it proves itself. Once a JMC has a developed mine, it moves toward becoming a LMC and can justify and build its market value in the manner of an industrial company.

Wrapped up in the capital raising process is the phenomenon of self-fulfilling prophecy, where rising market valuations often allow funds to be raised more easily and with relatively less dilution (which, in turn, increases market value and facilitates future capital raisings and associated business development)t in a fortuitous self-sustaining cycle. Similarly, falling share values makes it profoundly more challenging to execute capital raisings, and failed capital raisings can have a devastating impact on market values and sentiment, which again vastly increases the difficulties involved, and the required dilution of existing holders, of the still required capital raise. Thus, raising capital is a crucial first step for most JMCs and is an ongoing need, until a firm proves itself by finding and developing a significant ore body.

The literature in Australian markets, on SEOs, includes Denhart (1992 and 1993), who investigated the market's response to SEO announcements, in addition to Allen and Soucik (1999a; 1999b) and Brown et al. (2006), who looked at long run performance in the wake of a SEOs. More recently, Brown et al. (2008) analyzed share purchase plans, a particular species of SEO, which involve an offer to shareholders of up to $5,000 worth of new shares over a one year period at a discounted price and without brokerage. The Brown et al. (2008) study sampled 591 share purchase plans from 1991 to 2005 and found that firms who elected to pursue this style of SEO typically displayed lower levels of liquidity (i.e. current ratio) and net cash holdings in addition to having a more disparate share register (percent of share registrar held by non-top 20 shareholders). In addition, the study found that the immediate and long-term impact of share purchase plans was under-performance of share prices relative to the market. Factors found to influence immediate underperformance include the size and the level of discount of the share purchase plan, prior share price performance, whether non-shareholders have time to participate in the offer and the industry within which the firm is located. Long-run underperformance was mitigated in the case of mining firms, where the share purchase plan was underwritten and when the firm was audited by a "big-N" firm.

A select minority of JMCs operates mines and the earnings derived from such productive assets provide internally generated funding and access to a wider store of external capital raising options, at a reasonable cost.

IPO and the Winner's Curse

The *winner's curse*, in Rock's (1986) model, refers to the tendency for attractively priced IPOs to be secured by well-informed investors, leaving little chance for less-informed investors to participate in the potential gains. Lee et al. (1996) suggested a measure for this effect, namely the speediness in which new IPOs are funded—where more attractively priced issues are more quickly funded. This effect creates an empirical means for testing—where the speed of the IPO is positively related to the perceived degree of under-pricing in the industrial setting by How et al. (1995) and in the mining sector by How (2000). However, How (2000), finds that mining IPOs which are slower to be funded, typically enjoy greater performance in the longer-term (e.g. three-years after listing). Such results suggest that a perception of an attractively priced IPO may not be a good reflection of reality—unless the well-informed investors "flip" their acquisitions, shortly after the listing firm debuts on the market.

The JMC Investor

As noted in previous sections, information asymmetry and moral hazard issues are concerns that will affect the decisions of every prudent investor in the JMS. Other concerns and issues are discussed by Baker (2009). Baker (2009) contends that, until recently, corporate finance literature has focussed on various factors influencing the demand for corporate capital, to the neglect of the factors influencing the supply of corporate capital. Further, according to Baker's (2009) view: corporate finance demand effects involve specific characteristics of the firm and how these characteristics influence the capital raising process, while, supply effects are grouped into the following categories: (1) investor tastes (where the sentiment and demands of investors changes over time in a way which is not due to changing fundamentals and is potentially irrational); (2) limited intermediation (which recognizes that financial intermediaries are not always effective in ensuring the market prices are efficient; e.g., due to poor

capitalization, competition or incentives); and (3) corporate opportunism (where the corporate managers seek to raise funds when prices are high and to make repurchases when prices are low.

The boom in the JMS, as witnessed by the upsurge in the IPO market for JMCs over the past decade, is undoubtedly partly in response to the demand by investors for new investment vehicles in this suddenly prosperous and prominent investment space. Research demonstrates that market prices are influenced by changing demand by investors which is not underpinned by changing fundamentals (see Shleifer, 1986; Wurgler and Zhuravskaya, 2002; Mitchell et al., 2004; Greenwood, 2005).

Investor taste has a powerful impact, within the JMS, via the fad formation and speculative bubbles—such phenomena, likely facilitate the creation of market inefficiencies. Although inefficiencies might be assumed to be arbitraged-away by effective financial intermediaries, the requirements of such an benign outcome may be difficult to satisfy within the JMS (i.e., due to the sector's difficulties in generating effective and efficient valuation techniques, spotty coverage by reputable analysts, specialized knowledge, illiquidity, hyperbole, rumor, and high risk and uncertainty). The failure of financial intermediaries to ensure efficient market pricing is highlighted by studies such as Shleifer and Vishny (1997) and Brunnermeier and Pedersen (2005). Theoretical foundations arguing for deviations between investor demand and fundamentals includes Barberis et al. (1998) and Daniel et al. (1998) and (empirically) Odean (1998, 1999).

Where financial institutions have difficulty correcting market inefficiencies (because the investor tastes potentially cause prices to separate from fundamental values), such financial institutions can actually exacerbate the divergence and may be encouraged to do so by the, managers of JMCs—who will then attempt to exploit such inefficiencies by raising capital at favorable (high) prices and reacquiring shares at low prices for later re-sale at higher prices. Similarly, if a particular commodity-type is coveted and ripe with speculative interest, JMCs are incentivized to tap this demand and refocus their stated prospecting efforts towards the new in-vogue commodity-type. As part of this process, JMCs may seek to change their names to signal their new focus to investors. Indeed the Cooper et al. (2001) study shows how companies change their name in an effort to appeal to changing investor sentiments.

DOES JMC-MANAGER BEHAVIOUR REFLECT A MORAL HAZARD?

Baker (2009) argues that corporate managers are 'opportunistic' in issuing securities when prices are relatively high and repurchasing securities when prices are depressed. Taggart (1977), Marsh (1982), Asquith and Mullins (1986), Korajczyk et al. (1991), Jung et al. (1996) Hovakimian et al. (2001), and Virolainen (2009) are among those suggesting SEOs are issued at high prices. Ikenberry et al. (1995) provides supporting evidence of repurchases during times of depressed prices. The propensity to issue new funds at times of high prices is also evidenced by research finding subsequent poor returns post new equity issues, as seen in Stigler (1964), Ritter (1991), Loughran and Ritter (1995). Applied to the JMS, corporate managers will seek to issue securities when prices are high, but, without the luxury of time, these managers may be forced to issue securities when prices are less favorable, so as to fund the continued development of the JMC to sustain it as a going concern.

Erel, et al (2012) employed a large sample of debt and equity issuances in the United States from 1971 to 2007 to investigate the impact of macroeconomic conditions on capital raisings. Their findings support the important influence of macroeconomic conditions on the capacity of firms to raise capital. Among other findings, they found that, for non-investment grade borrowers (as in the JMS) capital-raisings typically flourish during economic upturns but are greatly diminished during economic downturns.

There is also evidence to suggest that the participation by management may be related to performance (Datar et al., 1991; Balatbat et al., 2004). Leland and Pyle's (1977) signaling model implies that high-levels of retained ownership by the issuer post-listing is supportive of a firm's value and prospects and so, should bring about lower levels of under-pricing. However, this contention has been questioned by the empirical findings of Lee et al. (2000), who found no significant relationship.

Future research should empirically test for the presence of the moral hazard issue discussed earlier in this study, where the JMC principal(s) seek to organize the structure of their firms to concentrate prospecting costs and risks in a subsidiary, to maximize the external benefits from the prospecting, and to concentrate those external benefits in the parent firm and/or in related firms. It should be noted that such actions, while difficult to prove, are clearly a social wrong and may possibly even be a variant of fraudulent preference. Further, the harm arising from such actions is not limited to the artificially-reduced returns to JMC investors but must also include the reduced JMS investment activity and increased deep-discounts imposed on the IPO and SEO share offerings of other JMCs.

Reputation and IPO Share Pricing and Performance

Reputation is often seen as an effective counter to information-asymmetry and moral-hazard issues. Chemmanur and Fulghieri (1994) contend that the reputation of the underwriter involved in a share issue (e.g. their historical of underwriting quality firms), is drawn upon by investors as an important signal to assess the quality of the issuing firm. This notion is supported by Michaely and Shaw (1994) in addition to Carter et al. (1998).

The reputation of a mining industry share issue may also be enhanced by the participation of other firms or persons of note—e.g., the 2007 Poseidon Nickel announcement that Andrew Forrest (founder of Fortescue) would participate in the firm's capital-raising and future direction and by the 2010 entry of Lynas Corp as a major shareholder in Northern Uranium.

The literature also suggests that reputation may play a pivotal role in the success or failure of IPOs (Block and Stanley, 1980; Beatty, 1986; Beatty and Ritter, 1986; Balvers et al., 1988; Beatty, 1989; Schiller, 1990; How et al., 1995). The general conclusion of the studies is that auditors and underwriters with strong reputations gravitate towards IPOs with less under-pricing and more certainty concerning the post-listing price. However, the How 2000 study found no empirical support within the ASX mining-sector for reputation positively affecting IPO share prices. Nevertheless, firms going to market with an IPO or SEO often develop narrates and attestation to attract sufficient capital, the veracity of which is mostly a function of reputation. Further, some researchers (e.g., How, 2000) allude to a possibility that sector specific factors of the mining industry may strengthen the role the reputation of firm auditors play and may mean that they have at least as strong a role for the JMS as they do for industrial firms.

The effect of prevailing market conditions on the initial performance of IPOs is well known (Ibbotson and Jaffe, 1975; Ritter, 1984; Ibbotson et al., 1988; How et al., 1995). How (2000) investigated the performance of 130 mining IPOs, on the ASX from 1979 to 1990 and found an average under-pricing of more than 100 percent, significantly more than the under-pricing of the IPOs of industrial companies. The How (2000) study was based (in part) on earlier work, in the USA, by Ritter (1984)—who found that mining company IPOs tended to be relatively more underpriced than those of other firms. Further, in reviewing the post IPO performance of mining firms, How (2000) found that they did not underperform the broader market (as described in the broader body of literature) for ASX listed industrial companies (see, also, Lee et al., 1996). How (2000) found that the primary variables related to the initial under-pricing were the prevailing market conditions at the time of the IPO and the time elapsed between the registration of the prospectus and listing. How (2000) found support for size of the listing firm, underwriter reputation, and period of time from the firm's incorporation to listing, as related variables.

Rock's (1986) model implies that the extent of under-pricing in the IPO market is related to the level of uncertainty around the post-listing price. Risk increases with uncertainty--thus, IPOs which are difficult to value and for which it is difficult to predict a post-IPO market price, are typically more underpriced, likely to compensate investors for the added risk. This relationship is empirically supported by Ritter (1984), Beatty and Ritter (1986), Beatty (1989), Wolfe and Cooperman (1990), How et al. (1995) and Lee et al. (1996a). This study suggests that there is a sharp dichotomy in the JMS as to the reliability of valuation: Class 1 firms consist of mining and late-stage development firms capable of relatively robust NPV-based valuations; and Class 2 firms, consist of exploration and early-phase feasibility firms (the majority of firms in the JMS) who have few if any reliable methods of valuation. It is suggested that future research seek to transfer insight from Rock's (1986) model into the IPO market,

into the SEO market for the JMS, by determining whether Class 1 SEOs are less discounted than Class 2 SEOs.

Information Asymmetry and Other Risks Afflicting JMC IPO Investors

While underlying causes for the under-pricing of IPOs remains contentious, leading theories focus on the conflating issues of moral hazard and information asymmetry. Specifically, the principal(s) of the issuing firm possesses greater knowledge regarding the firm's true value than potential investors, who fear that their lack of knowledge will result in them being duped into paying for external benefits that are organized to accrue to the principal(s) of the issuing firm while providing little or no benefit to the other shareholders of the issuing firm. As a result, the issuing firms must under-price their IPO offer, relative to intrinsic value. Thus, honest principals suffer because they cannot be differentiated from less honest principals, as do investor who want a fair investment for a fair price.

The long-run underperformance of IPOs is generally supported throughout the literature (Ritter, 1991; Aggarwal and Rivoli, 1990; Lewis, 1993; Keloharju, 1993; Aggarwal et al., 1993) and, within the Australian context, Finn and Higham (1988) and Lee et al. (1996). A notable exception to this finding is Lee et al. (1996b) who studied the Singaporean IPO market for mining sector. Intriguingly, the How (2000) finding that mining IPOs are substantially more underpriced than industrials was entirely a product of gold firms within the sample—reinforcing the special place of gold-focused firms within the larger JMS. Gold firms are often heralded in the literature as a special case, because they are often a hedge for most other investment opportunities (Low, 2011).

Bowen et al. (2008) investigated the capacity of investment analysts to reduce information asymmetry and, thereby, reduce the costs of capital-raisings. They looked at the level of under-pricing for 4,766 SEOs in the U.S. issued between 1984 and 2000. The principal finding was that increased analyst coverage does decrease under-pricing. Additionally, the quality of the analysis and whether they were employed by the lead underwriter, also, decreased the under-pricing. This is in contrast to other studies which questioned the value of analysts, given the conflict of interest risks—e.g., Zhang (2005) argues that analysts disproportionately benefit already relatively informed investors and, thus, exacerbate information asymmetries.

Cranstoun (2010) tested the value-relevance of capital-raisings from Aug/08-Mar/10 on gold firms with market valuations from $100-to-$800 million, listed on major US and Canadian Exchanges. That research yielded a sample of 42 public and 59 private capital transactions. Tested potential-value-relevant factors were: (1) dilution percentage (i.e. Total Transaction Volume/Market Cap on day of Transaction), (2) prior stock performance (i.e. LTM returns/ benchmark, ARCA:GDX), warrant issuance (Y/N), presence or absence of producing facilities (Y/N) and underwriters' domicile (Canada/Other). Cranstoun (2010) suggests that his finding of no significant value-relevant factors may be due to a small sample size and because capital raisings are linked with issues that both depress and enhance prices (e.g. respectively, dilution and imminent mine development/production) resulting in a negligible little net impact. The outcomes of Cranstoun's study may also have been hindered by the study's target period (i.e. share price performance on the day prior to the announced capital-raising was compared to the share price on the day of the announced capital raising). Such a selection presupposes a near-perfect market and runs counter to more recent empirical research (which suggested that insider trading is relatively rampant within the mining sector). Bird et al. (2010) found that 40 percent of the value-content of exploration announcements, 50 percent of the value-content of resource announcements and fully 100 percent of the value content of reserve announcements was already priced by the market, prior to the price-sensitive announcement. As a result, the value-relevance of the capital raisings assessed by Cranstoun may already have been priced-in by the market, the day before the announcement.

The literature clearly identifies why JMCs must seek equity funding and eschew credit funding. Specifically, credit-market imperfections (e.g. asymmetric information between lenders and borrowers) cause credit to be inordinately costly. Further, it is suggested that the magnitude of external finance premiums is an inverse function of the borrowing firm's net worth (defined as the sum of liquid assets and the collateral value of illiquid assets; Bernanke et al., 1996)—given that JMCs are most highly

uncertain potential with very high moral hazard risks, they have little to commend them to prudent creditors.

CONCLUSIONS

This study highlights the importance of prospecting by the JMS to wealth creation in modern economies, the difficulties JMC have in funding their prospecting efforts, and that JMCs need to seek external equity funding. Information asymmetries in the JMS were discussed with possible occurrence of moral hazard and their baleful influence on the pricing of JMC IPO and SEC share issues.

The role of reputation as a possible means of moderating the information asymmetries effects in JMC IPO and SEC share issues was considered but the empirical evidence was mixed and the continuing presence of deep-discounting of JMC share issues suggests that it is, at best, only marginally effective.

The analysis suggests that, given the great difficulties in resolving information asymmetries and possible moral hazard in the JMS, a few unscrupulous JMC principals may have been encouraged to organize the opportunities, costs and risks of their firms benefit their interests and those of a select few at the cost of investors in subsidiaries that were carefully crafted to concentrate the costs and risks of prospecting in the subsidiaries while shifting the gains to externalities concentrated in the parent JMC and/or related firms. It is important to note that, investors in such subsidiaries may make a fair to excellent return on their investment in the JMC subsidiary, but that return is a mere fraction of the gain created by their investment. If such manipulations are occurring, they are at least a social wrong and may even be a variant of fraudulent preference.

A quick policy offset to the moral hazard issue in the JMS would be a significant increase in the tenement fees and to allow JMCs to deduct their *bona fide* prospecting costs from those fees or a significant portion of those fees.

Future Research

Future research should determine to what degree are the massive returns experience by a few JMCs (e.g. their shareholders receive multiples of their investments of 10-fold or even many 100s-fold) true and fair returns their investment and to what degree are those returns derived from manipulative, moral-hazard-laden preference. If it is found such manipulations are occurring, the harm arising from should be evaluated under the understanding that the harm is not limited to artificially-reduced returns to JMC investors but must also include the reduced JMS investment activity and increased deep-discounts imposed on the IPO and SEO share offerings of the majority of JMCs, who are managed by honest hard-working entrepreneurs.

Future research should seek to further disentangle the mixed results of empirical research on the effect of reputation on the pricing of JMC share offerings. Part of that future research should be to seek to transfer insight from Rock's (1986) model into the JMS by determining whether class 1 JMC SEOs are less discounted than class 2 JMC SEOs.

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