FLOW-THROUGH SHARES: AN EVALUATION REPORT

Executive Summary

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EXECUTIVE SUMMARY

An Overall Perspective

Over the period 1983 to 1991, flow-through shares were generally relevant, effective and cost-effective in meeting the federal government's policy objectives of encouraging exploration in Canada, stimulating equity-based investments in mining and petroleum companies, and assisting junior exploration companies.

In terms of relevance, the evaluation found that the flow-through share financing mechanism responded to a need identified by mining and petroleum companies and was consistent with government priorities during the 1983 to 1991 evaluation period. The mechanism was conceived by industry to allow junior companies to obtain the funding or expertise necessary to explore and develop a promising mineral or petroleum prospect, and provided a practical and efficient commercial forum for recognizing and accommodating the differing contributions of the issuing company and its investors. Flow-through shares occupy a unique place among the various specialized financing alternatives available to facilitate investments in exploration and development by mining and petroleum companies. Their features render them the most readily accessible of these financing alternatives and result in their relatively widespread commercial application. Flow-through shares help to stimulate exploration and development by, in essence, allowing mining and petroleum companies to transfer otherwise unusable or unused tax deductions relating to these investments to investors in exchange for a premium over the market price of the company's common shares.

Evaluation findings are mixed in respect of the effectiveness of flow-through shares in achieving its objectives. On the positive side, flow-through shares:

- raised equity-based financing primarily for mining and petroleum exploration, especially gold exploration;
- accounted for a large share of all funding for mining exploration (averaging 60 per cent for the period 1987 to 1991);
- resulted in significant incremental spending on mining and petroleum exploration and significant incremental exploration drilling activity;
- benefitted the economies of Alberta, British Columbia, Ontario and Quebec; and
- benefitted non-taxpaying junior exploration companies.

However, incremental exploration activity generated by flow-through shares was not particularly high, inflated exploration drilling costs were experienced in the mining industry, and there was little evidence that the incremental exploration spending and drilling activity resulted in incremental discoveries attributable to this financing mechanism. Flow-through shares were also often tax-motivated investments which focused on more valuable exploration write-offs and which were characterized by relatively rapid spending by issuing companies and share disposition by investors. The evaluation also found that the effectiveness of flow-through shares in raising financing depended crucially on resource-commodity price levels (especially world prices for gold and silver), general economic conditions (e.g., the 1990 economic recession), the economic prospects of the issuing company, the fiscal treatment of the exploration and development expenditures renounced to investors, and the bargaining power of investors relative to the issuing companies.

As in the case of effectiveness, evaluation findings in respect of the cost-effectiveness of flow-through shares are mixed. On one hand, flow-through shares resulted in substantially more incremental exploration spending than federal tax revenues foregone between 1987 and 1991: each dollar of federal tax expenditure resulted in incremental expenditures of, on average, $3 in the case of mining exploration and $2 in the case of petroleum exploration. Economic theory indicates that flow-through shares are the most cost-effective equity-based financing option for non-taxpaying exploration companies. Furthermore, empirical evidence reveals that they provided a significant incentive for exploration by non-taxpaying firms. On the other hand, flow-through shares performed poorly as equity investments in mining and petroleum.

Numerous factors affected the cost and accessibility of flow-through shares between 1983 and 1991. The level and the share of exploration spending financed by flow-through shares were found to move in concert with fiscal and market conditions. However, the quantitative impact of individual factors affecting flow-through shares and exploration activities is not separately identified in this evaluation.

During the 1983 to 1987 period of favourable commodity and stock prices for gold and silver, key factors that exerted a positive influence on flow-through shares, and thus on exploration activity, included the mining earned depletion allowance which was introduced in 1983, the increasing participation of large limited-partnership intermediaries in flow-through share investments between 1983 and 1987, the lifetime capital gains exemption which was introduced in 1985, and income tax changes in 1986 which limited investor liability in flow-through shares. Empirical evidence indicates that the tax benefits of flow-through shares were shared between investors and issuing companies and that this sharing tended to vary inversely with firm size due, in part, to the influence of the limited partnerships.

At the same time that commodity and stock prices for gold and silver began to fall, the 1987 reform of the income tax system exerted a negative impact on flow-through shares by, for example, phasing out the mining earned depletion allowance, reducing personal income tax rates and introducing the cumulative net investment loss rules. As a result, flow-through share financing moved more in line with historic levels by 1991. In addition, empirical evidence reveals that flow-through shares performed very poorly when compared to an equity investment in the TSE sub-index for mining and petroleum companies between 1986 and 1990. This poor investment performance would have directly affected the demand for flow-through shares as well. Compounding this, the 1990 economic recession adversely affected the general environment for exploration and flow-through shares.

Large amounts of equity-based financing for exploration were raised by flow-through shares between 1983 and 1991 so that the mechanism was effective in this sense. However, the effectiveness of flow-through shares in generating incremental mining and petroleum exploration was reduced due, for example, to disproportionate increases in gold exploration activity, to overheating (i.e. inflated drilling costs) in mining exploration, to downward pressure being exerted by large limited partnerships on the premium received by junior companies, and to tax-motivated flow-through share investments during the mid-1980s. Flow-through shares were a cost-effective means to finance exploration in that they induced incremental exploration spending in excess of federal tax expenditures, but the same factors that reduced effectiveness also reduced their cost-effectiveness. Regardless, flow-through shares were a cost-effective financing mechanism for non-taxpaying companies throughout the period and as effective as any possible equity-based financing alternative designed to achieve the same objectives.

While the fiscal regime and market conditions combined to make flow-through shares appear to be an attractive investment in the mid-1980s, flow-through share investments made at that time did not perform well. This finding, together with the existence of a much less favourable environment, implies that interest in flow-through shares, especially by individual investors, was considerably lower in 1991 than in 1987. Of course, the degree of investor interest and its underlying determinants directly impact on the role for limited partnerships in facilitating the flow-through share transaction. In particular, reduced demand for flow-through share investments due to economic conditions and the experience of investors, together with the smaller tax value of deductions for exploration and development, significantly reduced participation by limited partnerships in 1991. With diminished investor interest and involvement by limited partnerships, the effectiveness of flow-through shares in assisting junior companies and in financing a high share of exploration spending was compromised as well.

Within the much less favourable investment climate that existed in 1991, the motivation for investing in flow-through shares tended to be their underlying investment potential as opposed to their tax features as was the case in the mid-1980s. This meant that flow-through share investors were less concerned with relatively quick exploration successes and, therefore, that their investment horizons in 1991 more closely matched those of the issuing companies. Flow-through share agreements also began to move beyond their preoccupation with the search for gold to encompass a more balanced portfolio of minerals. With these changes, the pace of exploration activities and the occurrence of discoveries can be expected to slow as companies analyze exploration results more fully before continuing with an exploration program and the quality of exploration work improves. This, in turn, would likely lead to an increase in the average size of discoveries and allow these discoveries to be brought more quickly into production. Furthermore, the more even pace of exploration effort by issuing companies across a given year would largely eliminate the negative impacts of overheating during the winter season. This would have a significant positive impact on effectiveness in terms of incremental exploration drilling activity stimulated by flow-through shares, and would further enhance their cost-effectiveness in terms of federal tax expenditures associated with this form of financing.

What Is a Flow-Through Share?

Flow-through shares are one way for mining and petroleum companies to finance their exploration and development activities in Canada. These tax-advantaged equity instruments are issued by means of flow-through share agreements between resource companies and their investors. For every flow-through share purchased from a mining or petroleum company under such an agreement, investors receive an equity interest in the company plus the right to income tax deductions associated with new expenditures on exploration and development.

For mining and petroleum companies, flow-through shares can provide a less costly means of raising equity-based financing for exploration and development. In addition, by permitting a widespread share issue, they allow access to a broad range of investors while minimizing the impact on corporate management and control. Although flow-through shares are available to all mining and petroleum companies, the mechanism is designed to be of principal benefit to non-taxpaying junior exploration companies, i.e. companies which are unable to utilize income tax deductions for exploration and development and whose access to alternative sources of financing are limited.

For investors, flow-through shares are an alternative type of resource investment which offers substantial liquidity, is tax-advantaged relative to other forms of risk capital, and can reduce the risk associated with mining and petroleum investments depending on how investments in flow-through shares are structured. Under a flow-through share agreement, the investor enjoys limited liability, a specified share in any profits of the corporation, and a residual right in the property of the corporation upon dissolution.

Who Uses Flow-Through Shares?

Corporate income tax data for 1987 to 1990 indicate that a "typical" issuing company was a non-taxpaying Canadian public corporation based in either British Columbia, Alberta, Ontario or Quebec. However, a marked distinction existed between mining and petroleum companies. Mining companies were more likely to be non-taxpaying public corporations based in either British Columbia, Ontario or Quebec. Petroleum companies were more likely to be taxpaying Canadian controlled private corporations either based in Alberta or with a multi-jurisdictional base of operations. These differences reflect both the differing nature of the two industries and the geographical location of mineral and petroleum resources in Canada.

Based on personal income tax data for 1989 and 1990, a "typical" flow-through share investor was a married male in his forties residing in Quebec or Ontario, an employee of either the private or public sector, and in the top income tax bracket. However, none of these characteristics was displayed by more "aggressive" investors, i.e. those who invested the largest share of their income in flow-through shares. While there was no "typical" aggressive investor, they were more likely to be: married females; under 30 years of age; residents of either the Yukon, Saskatchewan, Manitoba or New Brunswick; medical doctors or dentists; and subject to the lowest income tax rates.

What Is the Purpose of Flow-Through Shares?

There is no statement of general policy intent relating to flow-through shares in federal budget documents. However, government policy statements in respect of tax-based incentives (e.g., earned depletion) and direct grants (e.g., Canadian Exploration Incentive Program grants) indicate that flow-through shares are used to support economic and social policy by:

- encouraging additional exploration and development in Canada;
- promoting equity investments in mining and petroleum companies; and
- assisting junior (typically non-taxpaying) exploration companies whose access to internal sources of financing (i.e. cash flow) may be limited.

Since flow-through shares allow investors to access income tax deductions for exploration and development more quickly than the companies which issue them, they result in a tax cost to government. The net federal tax cost of exploration financed by flow-through shares is estimated at $563 million for the period 1987 to 1991; it fell each year from $283 million in 1987 to $14 million in 1991.

Why Are Flow-Through Shares Being Evaluated?

The purpose of this evaluation is to investigate the performance of the flow-through share mechanism in relation to its policy objectives and various design, fiscal and market factors that affect its performance. The time period for empirical analysis is principally from 1987 to 1991, but goes back to 1983 in some cases.

This report discusses the flow-through share financing mechanism, outlines the issues for evaluation, presents the methodologies used to evaluate different aspects of the performance of the flow-through share mechanism, and sets forth the findings and conclusions of the evaluation.

What Are the Evaluation Issues?

The performance of flow-through shares is assessed in terms of their relevance, effectiveness and cost-effectiveness in meeting their policy objectives.

Relevance

To what extent did flow-through shares realistically address an actual need and to what extent were they consistent with government priorities between 1983 and 1991?

Budget papers and other government documents issued between 1983 and 1991 indicate that it was government policy to help the mining and petroleum industries attract financing for exploration and development, to encourage risk-taking and equity investments in mining and petroleum companies, and to assist junior exploration companies. Flow-through shares were one means by which these policy objectives were pursued. In addressing the issue of relevance, the evaluation thus considers the origins of the flow-through share mechanism, and the extent to which flow-through shares offered an alternative to other financing options for exploration and development available to mining and petroleum companies, and provided opportunities for attaining the government's policy objectives.

Effectiveness

To what extent were flow-through shares effective in meeting their policy objectives without unwanted outcomes between 1983 and 1991?

The effectiveness (or success) of flow-through shares is explored by examining:

- the amounts of flow-through share equity raised for exploration and development by mining and petroleum companies;
- the role of partnership intermediaries in facilitating the flow-through share transaction;
- the degree to which this financing was spent on, and enhanced, exploration and development activities;
- the benefits flow-through shares provided to junior companies; and
- whether investment decisions made by both issuing companies and investors were based more on economic merit than tax considerations.

Cost-Effectiveness

Were flow-through shares cost-effective in achieving their government policy objectives between 1983 and 1991, and to what extent were flow-through shares cost-effective relative to alternative financing mechanisms that could have achieved the same objectives?

Cost-effectiveness is investigated by comparing federal tax expenditure estimates for exploration financed by flow-through shares to the amount of incremental exploration expenditures generated by these equity-based investments. Analysis of rates of return realized by flow-through share investors in certain limited partnerships provides background information necessary for calculating these federal tax expenditures. The rate-of-return calculations also provide a perspective on the cost-effectiveness of flow-through shares from the viewpoint of the investor or buyer. From the viewpoint of the other party to the transaction, i.e. the issuing firm or seller, the cost-effectiveness of flow-through shares is explored by considering the extent to which flow-through shares reduced the relative cost of raising equity-based financing for exploration and development. In addition, the cost-effectiveness of flow-through shares for society in general is considered by examining costs and rates of gold discovery in Canada since 1946.

Other than flow-through shares, no equity-based financing mechanism has ever existed that would afford the same opportunity for junior companies to realize the tax value of new exploration and development expenditures before the companies become taxpaying. Consequently, it is not possible to compare empirically the cost-effectiveness of flow-through shares to alternative financing mechanisms designed to achieve the same policy objectives. Nevertheless, theoretical alternatives to flow-through shares are explored.

What Are the Conclusions of the Evaluation?

Relevance

The evaluation found that flow-through shares addressed an actual need and were consistent with government priorities during the evaluation period from 1983 to 1991. Flow-through shares are one means by which the federal government pursues its policy objectives of stimulating exploration and development, encouraging risk-taking and equity investments in mining and petroleum companies, and assisting junior exploration companies. Flow-through shares help to stimulate exploration and development by, in essence, allowing mining and petroleum companies to transfer otherwise unusable or unused tax deductions relating to these investments to investors in exchange for a premium over the market price of the company’s common shares.

Flow-through shares occupy a unique place among the various specialized financing alternatives available to facilitate investments in exploration and development by mining and petroleum companies. Four alternatives are considered in this evaluation: joint ventures, joint exploration corporations, partnerships and limited partnerships. These financing options allow investors to claim income tax deductions for Canadian exploration expense (CEE), Canadian development expense (CDE) or Canadian oil and gas property expense (COGPE) in the manner most suitable to the particular circumstances and preferences of investors; their distinct characteristics appeal to different types of investors. The flow-through share mechanism stands in marked contrast to each of these financing alternatives, possessing a unique combination of features which render it the most readily accessible financing structure and result in its relatively widespread commercial application.

The flow-through share financing mechanism responded to a need identified by mining and petroleum companies. It was conceived by them after exploration and development expenditures became fully deductible in calculating income tax in 1947. The mechanism allowed junior companies to obtain the funding or expertise necessary to explore and develop a promising mineral or petroleum prospect. It provided a practical and efficient commercial forum for recognizing and accommodating the differing contributions of the issuing company and its investors, and facilitated financing for exploration and development by allowing investors to realize directly and immediately the tax value associated with resource expenditures. This expenses-for-shares transaction was subsequently recognized in income tax legislation for the 1954 taxation year, at which time certain restrictions were introduced to define its scope and operation. Income tax conditions on flow-through shares have evolved substantially since that time.

Effectiveness

Evaluation findings are mixed in respect of the effectiveness of flow-through shares in achieving its objectives. On the positive side, flow-through shares:

- raised equity-based financing primarily for mining and petroleum exploration, especially gold exploration;

- accounted for a large share of all funding for mining exploration (averaging 60 per cent for the period 1987 to 1991);

- resulted in significant incremental spending on mining and petroleum exploration and significant incremental exploration drilling activity;

- benefitted the economies of Alberta, British Columbia, Ontario and Quebec; and

- benefitted non-taxpaying junior exploration companies.

However, incremental exploration activity generated by flow-through shares was not particularly high, inflated exploration drilling costs were experienced in the mining industry, and there was little evidence that the incremental exploration spending and drilling activity resulted in incremental discoveries attributable to this financing mechanism. Flow-through shares were also often tax-motivated investments which focused on more valuable exploration write-offs and which were characterized by relatively rapid spending by issuing companies and share disposition by investors. The evaluation also found that the effectiveness of flow-through shares in raising financing depended crucially on resource-commodity price levels (especially world prices for gold and silver), general economic conditions (e.g., the 1990 economic recession), the economic prospects of the issuing company, the fiscal treatment of the exploration and development expenditures renounced to investors, and the bargaining power of investors relative to the issuing companies.

Premia and Sharing

The maximum premium over the price of a common share that a flow-through share investor would be willing to pay equals the value to that investor of the tax deductions and incentives for exploration or development. However, the normal functioning of capital markets generally results in the premium actually received by issuing companies (i.e. the observed premium) being less than the maximum possible. Specific reasons advanced for this capital-market sharing between investors and issuing companies include tax-induced investor surplus, incremental liquidity risk, incremental transaction costs, and the market power of broadly-based limited-partnership intermediaries.

It has been proposed by other authors that the degree of sharing between issuing companies and investors can be used to assess the relative effectiveness of flow-through shares as a mechanism for delivering the value of tax benefits to issuing companies. Specifically, sharing is evidence of ineffectiveness. However, it is demonstrated here that the existence of sharing does not mean that flow-through shares are ineffective. Rather, such so-called "effectiveness measures" fail to reflect the true nature and intent of flow-through shares. Furthermore, it is argued that this financing mechanism is as effective as any equity-based financing alternative designed to achieve the same objectives, and is a more effective delivery mechanism where firms are non-taxpaying and investors are subject to low tax rates and cannot access the lifetime capital gains exemption.

Levels of Flow-Through Share Financing

Amounts of CEE flowed through to investors (i.e. renunciations of CEE) equalled $3.0 billion or 93 per cent of all expenses renounced between 1987 and 1991. Renunciations of mining-related CEE equalled 75 per cent of all renunciations over this period. About 75 per cent of companies that issued flow-through shares between 1987 and 1991 were mining companies. The bulk of renunciations were made by a disproportionately small number of issuing companies and the general trend after 1987 was for fewer companies to renounce smaller amounts of both CEE and CDE.

Renunciations of mining-related CEE, in 1991 dollars, rose from $45 million in 1983 to a peak of $1.1 billion in 1987 due to the combined effects of:

- improvements to the basic design of this financing mechanism (e.g., income tax changes affecting investor liability and the increasing involvement of broadly-based limited partnerships in the transaction);
- favourable market conditions for mining (e.g., relatively high prices for gold and silver, and for mining stocks); and
- bonus deductions for mining exploration (i.e. the mining exploration depletion allowance) and the lifetime capital gains exemption.

The attractiveness of flow-through shares was significantly reduced after 1987 due to:

- a deterioration in market conditions (e.g., falling commodity and share prices for gold and silver, and the 1990 economic recession); and
- the 1987 income tax reform which reduced their tax-advantaged status (e.g., by reducing personal income tax rates, phasing out the mining earned depletion allowance and introducing the cumulative net investment loss rules).

Nevertheless, the $65 million of mining-related CEE renounced in 1991 was almost 50 per cent higher than the $45 million (in 1991 dollars) renounced in 1983.

Due to the location of mineral deposits and petroleum reserves in Canada, flow-through shares had important regional impacts. Ontario, British Columbia and Quebec were the principal beneficiaries in the case of mining; Alberta was the principal beneficiary in the case of oil and gas. Of the 2,035 companies that issued flow-through shares between 1987 and 1991, 98 per cent were located in British Columbia, Alberta, Ontario and Quebec, with the provinces ranked in that order. These companies accounted for 95 per cent of the $3.3 billion renounced over this period. However, the provincial ranking was reversed in terms of the average amount renounced per company.

Partnership Intermediaries

Flow-through shares were facilitated significantly by the participation of limited partnerships in the transaction. Partnership intermediaries were the dominant means of issuing flow-through shares. They accounted for 61 per cent ($2.0 billion) of renunciations between 1987 and 1991, and raised funds almost entirely for exploration and primarily for mining. In contrast, direct issuance was the dominant mode for all categories of expenses renounced by petroleum companies. Mining companies that employed both partnership intermediaries and direct issuance accounted for the largest amount of renunciations from 1987 to 1991. Most petroleum companies used only direct issuance.

Most renunciations by means of partnership intermediaries occurred in 1987 and 1988, although these renunciations remained high in proportion to total renunciations from 1987 to 1990. The number of partnerships, companies renouncing to partnerships and amounts renounced to partnerships declined significantly each year after 1987. The bulk of expenses were renounced to a disproportionately small number of partnerships which included the "broadly-based" limited partnerships. Partnerships that were the most successful in raising flow-through share financing also achieved the greatest amount of asset diversification and risk reduction by entering into agreements with large numbers of companies.

Impacts on Exploration and Development

The pattern of mining exploration expenditures from 1983 to 1991 mirrors the pattern of renunciations of mining-related CEE through flow-through shares. Levels of exploration expenditure increased generally from 1983, peaked in 1987 and 1988, and fell thereafter. After 1986, annual renunciations of mining-related CEE averaged 60 cents per dollar of mining exploration and ranged from a high of 82 cents per dollar in 1988 to a low of 17 cents per dollar in 1991. Thus, flow-through shares played a significant role in financing mining exploration, but their importance declined precipitously after 1988.

Over the period 1983 to 1991, the annual average amount of exploration expenditures in the petroleum industry was about four times that in the mining industry. The pattern of exploration expenditures was also markedly different from the mining industry with petroleum exploration peaking in 1984 and 1985 and declining sharply thereafter. Renunciations of petroleum-related CEE accounted for a relatively constant annual average of only 6 cents per dollar of petroleum exploration. There is evidence that world oil price levels and government incentives were more important factors influencing petroleum exploration spending than the availability of flow-through share financing.

Renunciations of CDE and COGPE were relatively insignificant from 1987 to 1991, and flow-through shares were not an important source of financing for either development or petroleum properties.

Incremental mining exploration expenditures attributable to flow-through shares are estimated at 49 per cent of all exploration spending between 1987 and 1991 by the mining companies that participated in the case studies. Incrementality for petroleum exploration expenditures equalled 30 per cent of all exploration spending by the petroleum companies in the sample. Due to overheating in mining, physical incrementality (i.e. incremental drilling activity) for mining exploration is estimated to have been 11 percentage points lower than incremental mining exploration spending.

While empirical estimates of incremental discoveries could not be generated, anecdotal evidence suggests that some incremental discoveries were directly attributable to flow-through shares. Furthermore, information obtained through exploration financed by flow-through shares may lead to incremental discoveries in the future.

Junior Exploration Companies

Junior companies benefitted significantly from flow-through shares. Their share of mining exploration more than tripled from 15 per cent in 1983 to over 51 per cent in 1987, but fell after 1988 to 21 per cent in 1991. The bulk of this exploration spending was financed by flow-through shares. Due to the participation of limited partnerships, flow-through share funding for junior companies could also be raised with relative ease although these companies often received only a small premium on their shares.

Underlying Investment Rationale

In considering a potential investment in flow-through shares, an investor would be interested in both its tax features and its longer-term investment potential. However, evidence strongly suggests that the issuance of flow-through shares between 1983 and 1991 was based more on tax considerations than the economic merit of the underlying resource activity. Mutual fund managers reported that investors were almost solely interested in the tax write-offs available from flow-through shares. One indication of this is the finding that investors usually did not purchase flow-through shares until the end of any given year, at which time they were more aware of their tax situations. In order to ensure that resource expenses were eligible for deduction in the same calendar year, resource companies generally sought to incur and renounce exploration expenditures (which were more valuable for tax purposes) in that year or within the first 60 days of the subsequent calendar year. As noted above, there was considerable evidence of overheating in the mining industry in terms of increased drilling costs and declines in project quality. In contrast, there was no evidence that the petroleum industry was affected by overheating. A key reason for this difference may have been significant excess capacity in the petroleum industry caused by the adverse effects of the 1986 world oil price decline.

Another indication of tax-motivated investments was the fundamental mismatch between the investment horizons of investors and issuing companies. Investors tended to sell their shares at the earliest opportunity while companies, particularly junior explorers, were more interested in a longer-term source of funds. The enormous downward pressure on share prices exerted by this investor behaviour presented major problems for issuing companies that had not yet attained some measure of exploration success. While substantial quantities of gold were discovered between 1983 and 1990 relative to the period from 1946 to 1979, the small size of the deposits suggests that exploration effort may have been concentrated on already-known and less-promising mineral deposits in order to meet the needs of flow-through share investors within a relatively short time frame.

Cost-Effectiveness

As in the case of effectiveness, evaluation findings in respect of the cost-effectiveness of flow-through shares are mixed. On one hand, flow-through shares resulted in substantially more incremental exploration spending than federal tax revenues foregone. Economic theory indicates that they are the most cost-effective equity-based financing option for non-taxpaying exploration companies. Furthermore, empirical evidence reveals that they provided a significant incentive for exploration by non-taxpaying firms. On the other hand, flow-through shares performed poorly as equity investments in mining and petroleum.

Incremental Spending Per Dollar of Federal Tax Expenditure

Federal tax expenditures for mining and petroleum exploration financed by flow-through shares declined dramatically from $283 million in 1987 to $14 million in 1991. Over 80 per cent of the tax expenditures over this period were in respect of mining. Between 1987 and 1991, each dollar of federal tax expenditure resulted in incremental expenditures of, on average, $3 in the case of mining exploration and $2 in the case of petroleum exploration.

Cost-Effectiveness for Investors

From the perspective of the investor, the investment performance of flow-through shares was not very attractive. The analysis of rates of return earned by investors in certain limited partnerships reveals that, although the pricing of flow-through shares favoured the investor in 1986, it moved in favour of the firm or the partnership between 1987 and 1990. If there were no incremental transaction costs associated with issuing flow-through shares, then most of the tax benefits were captured by issuing firms. Moreover, these benefits accrued to firms whose shares performed worse than an average share in the corresponding industry.

Cost-Effectiveness for Issuing Companies

From the viewpoint of the firm, flow-through shares can be cost-effective and promote exploration. The actual level of incentive depends on:

- tax parameters applicable to investors and issuing companies. The former determine the maximum premium obtainable from issuing flow-through shares. Both categories of tax parameters determine the tax rate on an additional dollar invested in exploration and development (i.e. the marginal effective tax rate or METR); and

- the extent of sharing of the flow-through share premium between issuing companies and investors.

Income tax considerations affecting the maximum premium include personal income tax rates, rates of deductibility for renounced expenses, the capital gains inclusion rate, the availability of the lifetime capital gains exemption and the operation of the cumulative net investment loss rules. METRs are affected by the flow-through share premium, corporate income tax rates, the rate of resource allowance, the taxpaying status of the firm and the dividend tax credit rate.

Mining and petroleum companies are subject to the lowest METR on exploration and development financed by flow-through shares (i.e. the theoretical METR) when they receive the maximum premium possible from their investors. Theoretical METRs are lowest for non-taxpaying firms both absolutely and relative to METRs for exploration financed by either retained earnings or common shares. This implies that flow-through shares are the most cost-effective equity-based financing option for non-taxpaying firms. Theoretical METRs for taxpaying firms can be negative, which implies that the tax system encourages exploration by them, and less than METRs for common shares, which implies that flow-through shares are relatively more cost-effective. However, retained earnings are the most cost-effective financing option for taxpaying firms.

To the extent that the premium actually received by resource companies falls below the maximum premium, the METR on their resource investments (i.e. the actual or empirical METR) increases. However, while sharing increases the METR, illustrative empirical METR calculations support the proposition that flow-through shares still provided significant incentive for exploration by firms that were not fully taxpaying. Based on METR considerations alone, flow-through shares would not be a favoured option for fully taxpaying firms as they are the least cost-effective financing option. Incentive grants and bonus deductions were found to increase cost-effectiveness and promote exploration by reducing METRs regardless of the financing option employed.

Cost-Effectiveness for Society in General

In terms of the overall benefit to the Canadian economy, there were substantial discoveries of smaller gold deposits between 1983 and 1990 relative to earlier periods, but they have not yet been fully appraised due to existing unfavourable market conditions. In addition, due in part to overheating, the unit cost of discoveries between 1985 and 1990 was about 2.5 times as high as during "typical" periods. The ratio of the value of gold discoveries to the cost of exploration was about one-half the ratio for typical periods. Taken together, these findings suggest that flow-through share financed exploration between 1983 and 1990 may not have been as cost-effective as exploration efforts in earlier periods.