

Tax Shelter Finance: How Efficient Is It?

Glenn P. Jenkins*

PRÉCIS

De tous les moyens de financement utilisés habituellement à cause du traitement fiscal auquel ils donnent droit, les sociétés en commandite simple et les actions accréditives sont les deux les plus courants. Dans cet article nous essayons d'évaluer leur efficacité, c'est-à-dire que nous cherchons à déterminer le montant actuel des recettes fiscales auxquelles le gouvernement renonce pour chaque dollar de bénéfice sur le prix actuel réalisé par le promoteur d'un projet immobilier ou minier qui applique une méthode de financement le mettant à l'abri du fisc. Nous avons déterminé un cadre analytique pour chacune de ces méthodes de financement. Nous avons comparé les résultats d'un financement avec abri fiscal à une situation avec financement normal par actions. Nous avons ensuite utilisé ces cadres analytiques pour examiner neuf cas réels de sociétés en commandite simple investissant dans le secteur immobilier au Canada, et sept fonds réels avec actions accréditives.

Le montant futur qu'un promoteur immobilier espère retirer d'une propriété est une variable cruciale pour l'étude de l'efficacité des sociétés en commandite simple. Même si le promoteur craint que la valeur de sa propriété baisse jusqu'à environ la moitié de son prix actuel, le gouvernement canadien perdra environ 2,50 \$ en recettes fiscales pour chaque dollar gagné par le promoteur. En ce qui concerne les actions accréditives, le coût moyen pour le gouvernement en recettes perdues se situe entre 1,83 \$ et 2,68 \$ pour chaque dollar de bénéfice net réalisé par la compagnie minière.

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Ces conclusions indiquent que de pareilles méthodes de financement avec abri fiscal ne sont pas efficaces pour permettre aux compagnies d'utiliser les pertes fiscales. Au lieu de maintenir ces abris, les autorités devraient plutôt envisager des méthodes de financement après impôt plus efficaces, l'introduction de mesures permettant un plus grand remboursement direct des pertes fiscales, ou l'élimination des stimulants fiscaux qui les provoquent.

ABSTRACT

Of the various types of financing instruments generally used because of the particular tax treatment they receive, limited partnerships and flow-through shares are two of the more popular. This article attempts to evaluate their efficiency—that is, to determine the present value of tax revenues given up by the government per additional present-value dollar received by the developer of the real estate or mining project as a result of the tax shelter financing instrument. An analytical framework is developed for each type of financing instrument. The outcomes using tax shelter financing are compared with the situation using normal equity financing. The framework is then used to examine nine actual cases of limited partnerships dealing with real estate investments in Canada and seven actual flow-through share funds.

The developer's expectations of the future value of the property is a key variable determining the efficiency of a limited partnership. Even if the developer expects the real value of the property to fall to about half its current cost, the Canadian government will lose about \$2.50 in tax revenues for every \$1.00 gained by the developer. In the case of flow-through shares, the average cost to the government in lost revenues is between \$1.83 and \$2.68 per \$1.00 of net benefit received by the resource company.

These results indicate that such tax shelter finance instruments are not efficient vehicles for allowing companies to utilize tax losses. Instead of continuing such tax shelters, the authorities should consider designing more efficient after-tax financing instruments, introducing a greater degree of direct refundability of tax losses, or eliminating the tax incentives that create the tax losses.

INTRODUCTION

In most income tax systems many corporations are non-taxable in any given year, often for reasons other than the lack of financial profitability. Usually they are non-taxable because the income tax system allows for certain costs to be deductible for tax purposes before the income accrues to the enterprise from its investments. Such firms tend to be younger and smaller, and to be heavier investors than the average, with an earnings base that is less diversified. The proportion of non-taxable corporations increases when the tax system contains accelerated depreciation allowances or provides generous investment tax credits for certain types of investment expenditures. The

corporations then may not have enough taxable income from prior investments to absorb the tax deductions and credits generated by their present investment activities.

The Canadian income tax system is a good example of such a situation. In any single year during the period 1978 to 1985, from 54 to 62 percent of corporations had no taxable income. Of the firms undertaking research and development expenditures, at least 75 percent could not fully use their tax deductions and investment tax credits. The mining and petroleum industries are classic cases of industries enjoying generous tax preferences: during that period approximately 60 percent of the oil and gas companies and 70 percent of the mining companies in Canada did not pay any income taxes.¹

Direct refundability of the tax value of the losses created by these tax preferences would give the non-taxable firms the same incentive as that received by taxable corporations. That option has been generally rejected by governments for a number of tax policy and political reasons. First, if a jurisdiction allowed complete refundability of the tax value of losses, the opportunities for tax avoidance would be dramatically enhanced for firms operating in several countries. Second, both governments and businesses are usually concerned that, politically, they would not be able to sustain generous tax provisions if the provisions became a visible budgetary expenditure. Third, refundability of the value of unused tax deductions would be expensive for the government, and would likely force it to reduce the statutory level of tax preferences or to increase tax rates. Such reductions in tax preferences or increases in tax rates would tend to hurt primarily the large, well-established firms that are taxable.

In the economics literature when the marginal effective rate of corporation taxation is measured or the cost of capital estimated, a common assumption is that all the tax incentives can be utilized by the firms in the period during which the incentives are legally available to them.² For this assump-

¹ See Graham Glenday and Jack Mintz, "The Nature and Magnitude of Tax Losses in Canadian Corporations," paper prepared for the Clarkson Gordon Foundation, July 1989; Revenue Canada, Taxation, *Taxation Statistics*, 1980 to 1986 editions (for taxation years 1978 to 1984) (Ottawa: Supply and Services, 1980-1986); and Department of Finance, Research and Development in Canada, 1984. The phenomenon of the non-taxability of corporations because of generous depreciation allowances has also been experienced in the United Kingdom. The causes and the extent of the tax losses were described in some detail in the UK green paper on corporation tax: United Kingdom, Chancellor of the Exchequer, *Corporation Tax*, Cmnd. 8456 (London: Her Majesty's Stationery Office, 1982).

² Examples of important studies that have implicitly or explicitly employed this assumption are Mervyn A. King and Don Fullerton, eds., *The Taxation of Income from Capital: A Comparative Study of the U.S., U.K., Sweden, and West Germany* (Chicago: Chicago University Press, 1984); and Robin Boadway, Neil Bruce, and Jack Mintz, "Taxation, Inflation, and the Effective Marginal Tax Rate on Capital in Canada" (February 1984), 17 *Canadian Journal of Economics* 62-79. Recently Vijay Jog and Jack Mintz completed a study, "Corporate Tax Reform and Its Economic Impact: An Evaluation of the Phase I Proposals," in Jack Mintz and John Whalley, eds., *The Economic Impacts of Tax Reform*, Canadian Tax Paper no. 84 (Toronto: Canadian Tax Foundation, 1989), 83-124, in which they estimate effective rates of taxation of capital in Canada; that study does not assume that all tax preferences can be immediately utilized. The results are significantly affected.

tion to hold, either the firms that receive the tax incentives must always have a positive taxable income, the government must provide a full and immediate refund of the tax value of taxable losses, or the losses must be freely transferable to companies that do have taxable income. In reality, none of these conditions exist. The potential effectiveness of tax incentives for stimulating investment, whether total or of a specific type, is greatly reduced.

When a large number of firms are not able to use the tax preferences as fast as legally allowed, pressures arise to create innovative after-tax financing (tax shelter) instruments. The purpose of these financing instruments is to transfer the tax losses of the corporation to investors who are willing to buy the losses to offset their taxable income. Unused tax credits are purchased to offset their tax liabilities directly. These instruments provide the income tax system with a measure of indirect refundability of tax losses.

Two of the more popular types of after-tax financing instruments in Canada are limited partnerships and flow-through shares. The objective of this article is to evaluate the revenue cost per dollar of net benefit obtained by enterprises that issue these financial instruments.

MEASURING THE REVENUE COST PER DOLLAR OF NET BENEFITS FOR LIMITED PARTNERSHIPS

Structure

The efficiency, E , of limited partnerships as a financing device is measured here as the ratio of the present value of the incremental loss in tax revenues incurred by the government (PVTC) to the increase in the present value of the benefits (PVB) received by the corporations that issue these instruments. That is,

$$E = \text{PVTC} / \text{PVB} \quad (1)$$

If E is equal to 1, then the tax instrument is a costless transfer mechanism. With direct tax loss refundability, E would be equal to 1 because the present value of the tax cost (PVTC) to the government would be equal to the present value of the benefits (PVB) received by the corporations from refundability. To the degree that this ratio is greater than 1 (that is, the higher the value of $E - 1$), it tells us the additional premium that has been paid to the investor or intermediaries to compensate them for the additional risk and transactions costs per incremental dollar transferred to the corporation. In other words, E may be greater than 1 if the investor requires a higher expected rate of return from the limited partnership investment than the normal cost of capital to the developer. Alternatively, E will be greater than 1 if the transactions costs of issuing and selling the limited partnerships are greater than the transactions costs of raising funds by issuing equity.

In this article we do not address the question of the degree of efficiency or inefficiency of the physical investments that are put in place through the use of the tax shelter instruments. The actual investments might be highly productive or a waste of resources. To evaluate whether it has been a good policy to promote investments through the use of limited partnerships and

flow-through shares, one must evaluate both the efficiency of the real investments as well as the efficiency of the financing instruments.

There are many ways of subsidizing the financing of real investments. Given the rate of desired subsidy, the government should try to deliver that subsidy in a cost-effective manner. This article attempts to measure the tax revenues expended to administer the particular tax shelter financing instruments. The analysis does not advocate that the government should use either direct expenditure programs or full refundability as alternatives to the use of tax shelter finance. It simply attempts to estimate the cost of employing those instruments.

The key attraction of a limited partnership is its ability both to provide a business venture with desired funds for expansion, and to provide the outside investor with tax benefits and limited liability. In general, the limited partnership consists of a union of a general partner (at least one), who is responsible for the management and liabilities of the business, with limited partners, who do not take part in running the business and are liable only to the extent of the capital contributions they have made or have agreed to make. In most instances, the limited partners will have very little to do with the partnership beyond making their capital contribution and receiving the financial information they need to file their personal tax returns.³

From a taxation point of view, a partnership is an accounting entity that is separate and distinct from the partners. Thus the determination of the amount of partnership income that is taxable is made at the level of the partnership. Unlike a corporation, however, the partnership does not pay the tax itself; rather, the partnership income is transferred and taxed in the hands of the individual partners according to their agreed shares.

A significant use of limited partnerships is to move tax losses from the operating business through to the investors. This arises particularly when an investor has taxable income from other sources, and the business venture seeking investment funds is making losses on a current basis (because of start-up costs, for instance). Since losses incurred by a partnership flow directly to the partners, they are fully and immediately deductible from any income earned by them from other sources. That capability makes outside investors willing to pay a premium for a partnership share. The loss flow-through mechanism is generally not available within a corporation (except for flow-through shares). A corporation, like a partnership, is a distinct entity and separate from its shareholders. Unlike a partnership, however, it is taxable, and its gains and losses are neither attributable to nor available

³ For a more complete technical description of limited partnerships in Canada see Lyle R. Hepburn and William J. Strain, *Limited Partnerships* (Don Mills, Ont.: De Boo) (looseleaf); Peter E. McQuillan and E. Cal Cochrane, *Understanding the Taxation of Partnerships* (Don Mills, Ont.: CCH Canadian, 1982); Edwin C. Harris, "The 'At-Risk' Rules for Limited Partnerships," in *Report of Proceedings of the Thirty-Eighth Tax Conference*, 1986 Conference Report (Toronto: Canadian Tax Foundation, 1987), 26:1-26; and Jeffrey Mandel, "Recent Developments in Tax Shelters," in *Report of Proceedings of the Thirty-Ninth Tax Conference*, 1987 Conference Report (Toronto: Canadian Tax Foundation, 1988), 45:1-31.

to its shareholders. Thus current losses of a corporation are deductible generally only from the future income of the corporation.⁴

Limited partnerships are widely used for financing the exploration and development of natural resource properties and real estate ventures. They are also used as a mechanism for raising risk capital by high-technology firms. In such cases the income tax system has generous provisions for the rapid deduction of investment expenditures. Those deductions often generate tax losses in excess of other income produced by the typical corporation.

In the case of real estate, there are certain "soft costs" that lead to large tax losses in the early years of a project. Those tax losses at the partnership level are immediately allocable to the partners, to be deducted by them against their other income. Start-up losses are also a common characteristic of real estate ventures because of the high amount of leveraging through mortgages, and the initial delays in obtaining full occupancy of most rental properties. Although there are many kinds of limited partnership structures, generally the sale of limited partnerships allows a developer to get cash up front for the transfer of such deductions; in exchange the developer gives up part of the cash flow along with the prospect of earning capital gains from the sale of the asset later.

An empirical analysis of the efficiency of limited partnership financing is carried out in this article using a series of real estate limited partnerships that were sold and implemented in Canada between 1983 and 1987.

Pricing

In the design and evaluation of limited partnerships, a series of benefit-cost analyses must be done from the points of view of the various participants in the project including the investor, the banker, and the general partner.

The point of view of the investor is the most straightforward. If he is willing to participate in the limited partnership, he must be getting a return that is at least as great as the return he can receive from other similar investments, after being compensated for any differences in risk. To evaluate such an investment, one must consider four components: (1) the amount of funds that the investor must pay for the unit of the partnership, U_i ; (2) the flow of cash from the partnership, U_b ; (3) the final value of the property net of capital gains taxes, if any, $(1 - t_g)R$; and (4) the value of the tax benefits, $t_p L$, of the tax losses that the partnership flows out to the investor. The effective rate of personal income tax is t_p ; the effective rate of capital gains tax (in present value terms) is t_g ; the present value is indicated by PV. It follows that the net present value of the limited partnership from the point of view of the investor, NPV_i , is

$$NPV_i = PV(U_b) + PV(t_p L) + PV(1 - t_g)R - PV(U_i) \quad (2)$$

⁴ In a case in which a corporation has made prior profits, it can carry back its losses to obtain a refund for taxes paid in prior years, but subject to a limit.

From the investors' point of view the expected net present value of the limited partnership, NPV_i , must be positive for them to be willing to purchase units of the limited partnership. As equation 2 indicates, the net present value is equal to the present value of any cash received from the project, $PV(U_c)$, plus the present value of the taxes saved from deducting the tax losses, $PV(t_p L)$, plus the present value of the asset when it is sold net of any capital gains tax, $PV(I - t_e)$. To get the net present value, the initial purchase price of the limited partnership, $PV(U_c)$, must then be deducted.

In most cases the general partner is the developer or the natural resource firm that is undertaking the actual physical investment activity. For the developer to be interested in setting up a limited partnership, it must yield him a greater return than if ordinary equity along with debt were used to finance that activity. To evaluate the project before the introduction of limited partnerships we assume that the developer raises equity funds and runs the project as a corporation. To determine the value of the project in this situation we must evaluate the entire investment, not just the portion financed by equity. The net present value of the project, $NPV(P_c)$, after all taxes have been paid but without the limited partnership financing can be expressed as follows:

$$NPV(P_c) = PV(B_o - C_o) - PV(I_c) - PV(T_c) + PV(R_c) \quad (3)$$

In other words, the net present value of the project, $NPV(P_c)$, is equal to the net present value of the net operating benefits of the project, $PV(B_o - C_o)$, less the present value of the investment costs of the project, $PV(I_c)$, less the present value of all taxes paid (corporate and personal) by the project, $PV(T_c)$, but plus the residual value of the assets of the project, $PV(R_c)$, as of the final year of the analysis.

Personal income taxes will be paid on the dividends ("Div"), but in Canada there is a dividend tax credit that (until 1987) was approximately equal to 33 percent of 1.5 times the amount of dividends received.³ The personal income tax rate is also applied to 1.5 times the amount of dividends received. The expression for the present value of personal taxes paid on the dividends from a project can be expressed as

$$PV(T_p) = (t_p - 0.333)(Div)(1.5) \quad (4)$$

The corporation income taxes, $PV(T_c)$, are calculated in the normal way and added to the amount of personal taxes paid by the shareholders to obtain the present value of all the taxes paid by the project, $PV(T_c)$.

The use of limited partnership financing introduces three new elements into the evaluation of the project by the developer. First, the developer obtains the capital contribution of the limited partnerships as a benefit, $PV(U_c)$. Second, the developer must bear certain administrative and promotion costs that are associated with setting up a limited partnership,

³ Because of the differences in provincial tax rates, this expression does not hold precisely for all provinces. Any error from the use of this approximation is very small.

$PV(A_i)$.⁶ Third, the project makes a stream of cash payments to the limited partners, which is an additional cost from the point of view of the developer, $PV(U_i)$. This arrangement also changes the amount of taxes paid by the corporation of the general partner and the shareholders of that corporation to $PV(T_i)'$. The return to the developer after the introduction of the limited partnership, $NPV(P_i)'$, now becomes

$$NPV(P_i)' = PV(B_o - C_o) - PV(I_i) + PV(U_i) - PV(A_i) - PV(U_i) - PV(T_i)' \quad (5)$$

In other words, the net present value of the project from the developer's point of view is equal to the present value of the net operating benefits of the project, $PV(B_o - C_o)$, less the present value of the investment costs of the project, $PV(I_i)$, plus his receipts from the sale of the limited partnership, $PV(U_i)$, less the administration costs associated with the creation and marketing of the limited partnership, $PV(A_i)$, less the cash to be paid out to the limited partnerships, $PV(U_i)$, less any taxes paid by the developer, $PV(T_i)'$. In this formulation it is assumed that the developer gives up the rights to the property; hence he will not participate in any capital gains or losses from the sale of the property in the future.

For the developer to be interested in organizing a limited partnership, he must expect to be made better off by this arrangement—that is,

$$NPV(P_i)' - NPV(P_i) = PVB > 0 \quad (6)$$

The revenue cost to the government, $PVTC$, from the introduction of the limited partnership is simply the present value of the taxes that would have been paid by the project and its shareholders without the limited partnership, less the amount of taxes paid by the project, its shareholders, and the limited partnership. That revenue loss can be expressed as

$$PVTC = PV(T_o) - PV(T_i)' + PV(L_iL) - PV(L_iR) \quad (7)$$

The efficiency of this type of tax-based financing instrument is the ratio of equation 7 to equation 6, or

$$E = PVTC / PVB \quad (8)$$

To the degree that E is greater than 1, the limited partnership is not a costless way to transfer tax benefits to the developer of the project. The additional revenue loss, ARL , created by this financing arrangement is derived as follows:

$$ARL = (E - 1)(PVB) \quad (9)$$

With pure tax loss refundability, E would by definition be equal to 1, and there would be no additional revenue loss. That is the benchmark by which this analysis is conducted.

⁶ The evaluation is carried out under the assumption that the people engaged in designing and marketing these instruments would be otherwise fully employed and that the business is not characterized by abnormally high profits. As a consequence no additional personal taxes are attributed to the costs created by the design and marketing of the instruments.

Estimation of the Efficiency of Some Limited Partnership Cases

Limited partnerships have been a common financial instrument in Canada for many years in the natural resource and real estate sectors. In the last decade, however, they have been used frequently to finance real estate developments such as hotels, shopping centres, apartments, and nursing homes. At times when the tax incentives were particularly generous for activities such as rental housing, limited partnerships have been an important form of providing risk capital for the financing of investments in the real estate sector.

Nine case studies are used for illustrative purposes in this article. (See table 1.) They have been chosen because they represent a conservative subset of the types of projects and arrangements financed through limited partnerships. All are real estate projects located in major urban areas of Canada. Many of the projects are hotels, with the rest being high-valued apartments or office buildings. The limited partnership financing is compared to a base case situation in which the project is organized as a stand-alone corporation. It is assumed in the base case that the developer has contributed equity financing equal to the amount raised from the limited partnership (less the additional formation and marketing costs associated with the limited partnership), and that the tax system would be applied to the project as a start-up corporation with the net earnings flowing out to shareholders and being taxed at the personal level as they are generated. The same debt structure is assumed to exist in both situations, with interest rates in the base case the same as in the limited partnership case. The base case represents almost a worst-case alternative to the limited partnership. As a consequence, the estimated benefits from limited partnership financing are biased upward.⁷

An important variable in the measurement of the net revenue cost of this type of financing is the choice of what discount rate to use in evaluating the present value of the various income streams. The higher the discount rate, the higher the present values of the cost of alternative sources of financing will be, and the greater the benefits of using limited partnership financing. Hence, the higher the discount rate, the lower the value of *E*. To bias our measure of *E* downward, a high after-tax nominal discount rate of 13 percent (net of both corporation and personal taxes) was chosen and used in all the cases examined here.⁸

A critical variable in the evaluation of the efficiency of each of these partnerships is the expected value of the facility—the hotel or the apartment building—at the end of the life of the project. The higher this expected residual value, the smaller will be the net benefit of the project from the developer's point of view, because he will have had to give up more in terms

⁷ Although the project is analyzed from the point of view of total investment (the banker's point of view) it is necessary to know the structure of the debt to determine the income tax liabilities of the project.

⁸ The nominal discount rate of 13 percent is used to discount the nominal cash flows from the project that are measured net of both corporation and individual income taxes.

of future asset values in order to get the up-front cash from the sale of the limited partnerships. Because we have no way of knowing what the developer's expectations are with respect to this variable, the analysis is carried out using alternative assumptions about the value of the assets at the end of the project relative to their initial values.

In the estimation of E the project is first evaluated as if the project had been a stand-alone corporation, financed by equity and debt. The net present value of the project is calculated from the point of view of the shareholders of the firm. As previously mentioned the net present value will depend on the expected value of the property as of the end year of the analysis. In terms of equation 3 this is the value of $NPV(P_e)$. The present value of the taxes is then calculated for the entire life of the project, including those paid by both the corporation and the shareholders. This is the value for the variable $PV(T_e)$.

The analysis is then carried out for the project when the equity portion of the financing is in the form of limited partnerships. The net present value is estimated for the project, net of all taxes paid by the developer, and after the limited partnerships have received what they have been promised. This is the value of $NPV(P_e)'$ in equation 5. Using the two net present values for the project, with and without the limited partnership financing, the increase in the net present value of the project from the point of view of the developer is estimated as $PVB = NPV(P_e)' - NPV(P_e)$.

The present value of the taxes paid by the developer is then calculated, as is the net present value of the taxes paid (or refunds received) by the limited partners. The change in the present value of taxes paid without and with the limited partnership financing can then be estimated as in equation 7, or $PVTC$.

Since the value of the efficiency index, E , is influenced by the expected future value of the property, we calculated what would have to be the relative net-of-tax price of the property after 20 years in order for E to have a value as low as 2.0 to 2.5. As table 1 shows, in almost all cases the expected real value of the property in the future could be less than half its real investment cost (see column 2) and still the value of E would be greater than 2.0 (see column 3). In other words, the revenue cost to the government per dollar of net benefit received by the developer would be greater than \$2.00 even if the value of the property were to fall in real value by at least 50 percent. If the developer believed that the value of the property would not fall so much, then the expected net benefit of the limited partnership financing would be smaller, and the revenue cost per dollar of benefits received by the developer would be larger.⁹

The amount by which E is greater than 1 indicates the degree to which the tax revenues lost have been spent on real resources to design and market the investment instruments and to which they have been used to pay a

⁹ Detailed examples of the calculations used in this analysis are available from the author.

Table 1 Revenue Costs per Dollar of Net Benefits of Limited Partnerships

Case	Ratio of Residual value/Investment cost ^a		E
	Nominal	Real	
Hotel ^b	0.41	0.15	2.56
Apartment ^c	1.65	0.62	2.42
Apartment ^d	2.29	0.86	2.40
Hotel ^e	1.37	0.52	2.45
Apartment ^f	0.53	0.20	2.50
Hotel ^g	0.78	0.29	2.50
Apartment ^h	1.24	0.47	2.49
Hotel ⁱ	1.14	0.43	2.27
Office ^j	0.04	0.02	2.49

^aThe residual value is the net-of-tax value of the property that is assumed to exist 20 years after the limited partnership is formed. The nominal ratio is this nominal residual value over the initial investment costs to build or purchase the property. The real ratio is the residual value of the property expressed in prices as of the first year of the project over the initial investment costs. As a 5 percent rate of inflation is used throughout the analysis, the real ratio is simply the nominal ratio divided by the price index at the end of the project—that is, 2.65. ^bHarbour Front Hotel Limited Partnership, Prospectus, 1985. ^cSix Silver Maple Limited Partnership, 1985 Offering Memorandum, 1985. ^dAubrey Estates Limited Partnership, Prospectus, November 17, 1983. ^eKing Street Hamilton Hotel Limited Partnership, Prospectus, October 1, 1984. ^fBoundaryview Place Limited Partnership, Prospectus, November 4, 1984. ^gManoir St. Sauveur and Company, Limited Partnership, Prospectus, October 23, 1987. ^hSherobee West No. 2 Limited Partnership, Prospectus, December 4, 1984. ⁱLe Marquis Hotel Limited Partnership, Prospectus, November 4, 1987. ^jSt. James Square Limited Partnership, Prospectus, August 14, 1986.

premium return on the limited partnerships to induce people to buy them. Although the instruments were designed to give tax relief to firms that could not use the generous incentives of the tax system, they appear to have the potential to waste large amounts of tax revenue. The tax system has often been suggested as an efficient means of channeling incentives, but these preliminary results indicate that the result can be a level of hidden costs that is unlikely to be tolerated in a system of open subsidization.

VALUATION OF FLOW-THROUGH SHARES

Structure

During the past few years, the most popular tax shelter in Canada has been the flow-through share financing in the mining industry.¹⁰ In the natural resources field (petroleum and mining), there are certain expenditures on exploration (Canadian exploration expense—CEE), development (Canadian development expense—CDE), and Canadian oil and gas properties expenses (COGPE) that may be passed through to shareholders who provide funding for those expenditures. Flow-through shares provide a mechanism by which a corporation can “sell” the expenditures to investors in return for equity. Most issues are ordinary common or convertible shares that are both publicly

¹⁰ Robert Raich, “Flow-Through Financing—Present and Future,” in the 1987 Conference Report, *supra* footnote 3, 43:1-14, at 43:1. The author estimates that in 1986 about \$700 million was invested in such shelters, and in 1989, \$1 billion.

or privately placed. Flow-through shares are therefore a form of tax-based financing for corporations in the natural resources field: capital can be obtained on favourable terms by selling shares at a premium (in relation to the existing market price of the firm's shares) in exchange for tax write-offs to the investors, who can use such tax deductions immediately.

The precise definition of these expenditures is complicated, but may be summarized as follows:

- CEE includes (1) any geological expenses in connection with petroleum or natural gas exploration in Canada; (2) expenses incurred in drilling or completing oil and gas wells in a field; and (3) exploration and development costs on mineral resource properties.
- CDE includes (1) expenses incurred in drilling or completing oil and gas wells in Canada after the commencement of production; and (2) costs incurred in acquiring a Canadian resource property that is a mineral resource.
- COGPE includes costs incurred in acquiring a Canadian resource property that is an oil and gas property.¹¹

The investor may claim the expenses that are transferred to him from the company at a rate per year of 100 percent for CEE, 30 percent for CDE, and 10 percent for COGPE.

In addition to permitting the 100 percent CEE deduction, the regulations to the Income Tax Act provide that a taxpayer is entitled to deduct the balance of his "mining exploration depletion base" to the extent that the deduction does not exceed 25 percent of his income. In effect, a taxpayer's mining exploration depletion base equals one-third of certain qualifying exploration expenses of the grassroots type. Accordingly, if an investor's cost of a flow-through share relates to CEE that qualifies for the additional 33 1/3 percent mining exploration depletion allowance (MEDA) deduction, he can deduct 133 1/3 percent of his cost from his income for tax purposes.¹²

Pricing of Flow-Through Shares

The maximum an investor would be willing to pay for a flow-through share is the market value of the share after it is free of all its special tax features, plus the present value of those features. At the same time, the minimum the issuer would be willing to accept is the value of the share if it were sold on the market without the tax features, plus the present value of the tax benefits he is giving up by renouncing them to the flow-through share investors.

If the instruments are efficient, the market price should be close to the maximum amount the investor is willing to pay. Additional transaction costs

¹¹ J.D.A. Struck, "Evaluation of Oil and Gas Shelters: Impact of the Alberta Agreement and Budget of November 12, 1981," in *Report of Proceedings of the Thirty-Third Tax Conference*, 1981 Conference Report (Toronto: Canadian Tax Foundation, 1982), 317-36.

¹² See Raich, *supra* footnote 10, and Leslie E. Skingle, "Carve-Outs and Flow-Through Shares," in the 1986 Conference Report, *supra* footnote 3, at 50:1-32.

or risk incurred by the investor will tend to reduce the amount the investor is willing to pay, and thus to reduce the efficiency of the instrument as a device to deliver a tax incentive.

Let us denote the market value of a company's ordinary share as S ; the present value of CEE deductions to the investor expressed as a proportion of the value of the total flow-through share receipts as KCE_p ; the present value of the MEDA deduction to the investor as a percentage of the flow-through share receipts as $KMEDA_p$; the present value of CDE deductions to the investor as a proportion of the value of total flow-through share receipts as KCD_p ; the present value of COGPE deductions to the investor as a proportion of the current value of total flow-through share receipts as $KCOGP_p$; the present value of the issuing and selling costs of the limited partnership fund of flow-through shares as KIC ;¹³ the effective rate of personal income tax as t_p ; the effective rate of capital gains tax (in present value terms) as t_c ;¹⁴ and the maximum price an investor would pay for a flow-through share as X . St_c is the amount of capital gains tax paid by the investor when he sells the shares. As the adjusted cost base of a flow-through share is zero, the expression relating the market price of an ordinary share to the maximum price of a flow-through share is

$$X = S + (X)(t_p)(KCE_p + KMEDA_p + KCD_p + KCOGP_p + KIC) - St_c \quad (10)$$

Simplifying, we obtain

$$X = \frac{S(1 - t_p)}{1 - (t_p)(KCE_p + KMEDA_p + KCD_p + KCOGP_p + KIC)} \quad (11)$$

The premium that an investor should be willing to pay for a flow-through share is a function of the proportion of expenditures made on CEE, the amount of CEE that qualifies for MEDA, CDE, COGPE, IC (the costs paid by the tax shelter vehicle, typically a limited partnership, of issuing and selling the flow-through shares via that vehicle), the personal tax rate, the length of time the share is held before sale (which determines the effective rate of capital gains tax), the personal rate of income tax, and the discount rate. The amount that an investor is willing to pay for a flow-through share will be larger, the higher his marginal tax rate, the greater the proportion of expenditures spent of CEE, and the longer he expects to hold the share.

In order for the investor to be interested in the flow-through shares as an investment, the premium he pays for the shares must be less than the value of the additional tax deductions he receives from the purchase, less any capital gains taxes he will pay. This relationship can be expressed as

$$(X - S) < [Xt_p(KCE_p + KMEDA_p + KCD_p + KCOGP_p + KIC) - St_c] \quad (12)$$

¹³ Typically a limited partnership is set up that purchases the flow-through shares of a number of firms. The investor then purchases the flow-through shares by buying units of the limited partnership fund. KIC represents the present value of the administrative costs that are incurred by the limited partnership or reimbursed by it to the original issuer of the flow-through shares.

¹⁴ When the taxpayer is eligible for the capital gains exemption, $t_c = 0$.

Similarly, for the firm to be willing to sell a flow-through share it must expect to receive more from the share premium (less the costs of issuing and selling the shares) than it gives up in the value of the tax deduction it loses. This relationship can be expressed as¹⁵

$$(X - S - IC) > [Xt_c (KCE_c + KMEDA_c + KCD_c + KCOGPE_c)] \quad (13)$$

where t_c is the rate of corporation income tax, and KCE_c , $KMEDA_c$, KDE_c , and $KCOGPE_c$ are the expected present values of the respective deductions from the point of view of the firm.¹⁶

The present value of tax cost (PVTC) to the government from the flow-through shares can be expressed as

$$PVTC = X [t_p (KCE_p + KMEDA_p + KCD_p + KCOGP_p + KIC) - t_c (KCE_c + KMEDA_c + KCD_c + KCOGPE_c) - St_g] \quad (14)$$

The first bracketed term is the value of the tax deductions that the investor receives after buying the flow-through shares. The second bracketed term is the tax value of the deductions given up by the corporation that issues the flow-through shares. The last term, St_g , is the amount of capital gains tax paid by the investor when he sells the shares. The net cost to the government is obviously the first term minus the second and third items.

From expression 13 the present value of the benefits received by the firm (PVB) can be expressed as

$$PVB = (X - S - IC) - Xt_c (KCE_c + KMEDA_c + KCD_c + KCOGPE_c) \quad (15)$$

In other words, the net benefit received by a firm that issues flow-through shares is the value of the share premium net of any issuing costs ($X - S - IC$) minus the tax cost to the company of the tax deductions it gives up when it issues the shares. It follows that the efficiency measure for the flow-through share instrument, $E = PVTC/PVB$, can be calculated as the ratio of equation 14 to equation 15. If there were direct refundability of the value of the tax deductions transferred via the flow-through shares, then the net revenue cost to the government would be exactly the same as the net benefit received by the enterprise. Hence, refundability has a value of E equal to 1.

Evaluation of Some Cases

To reduce the risk to the investor, the concept of pooling the shares of several companies has been developed. The usual approach has been to use a limited partnership that purchases the flow-through shares of several mining or petroleum companies and flows out the tax advantages to the limited partners. In this article an evaluation is carried out of the efficiency of seven such limited partnerships.

¹⁵ A corporation that is currently in a taxable situation may still wish to issue flow-through shares if the tax rates of individuals are higher than the corporation income tax rate, or if the corporation expects soon to be in a loss position before all the deductions for the activity can be taken.

¹⁶ In the case of a loss corporation, these deductions can be taken only at a later date, if ever, and thus have a lower present value.

Table 2 Revenue Costs per Dollar of Benefits for Flow-Through Shares

Case	Premium ^a	Corporations never taxable but capital gains tax paid when shares sold			Corporations never taxable and no capital gains tax		
		PVB	PVTC	E	PVB	PVTC	E
	%	\$ millions					
CMP86	72	3.8	5.5	1.44	3.8	6.8	1.81
CMP87I	92	4.3	5.2	1.20	4.3	6.8	1.57
CMP88I	20	0.8	2.3	2.99	0.8	3.4	4.45
CMP88II	12	0.5	1.5	3.20	0.5	2.8	5.80
CMP88III	17	0.7	2.2	3.32	0.7	3.4	5.14
NEF87	32	2.1	4.4	2.08	2.1	6.8	3.19
NEF88	13	1.0	3.0	2.99	1.0	5.4	5.30
Total		13.2	24.1	1.83	13.2	35.4	2.68

^a The premium is expressed as a percentage of the market value of the shares— $(X - S - IC)/S$.

The key variable for such an analysis is the amount of the premium $(X - S - IC)$ that the limited partnership has paid to the resource companies as a consequence of using the flow-through share mechanism for financing. That premium is measured by the difference between the price that the flow-through shares sell for, less issuing costs, and the price for which they would sell if stripped of the tax deductions. The only way to obtain the value of the shares without the tax features present is to observe the prices at which the shares trade in the stock market after they have been sold as flow-through shares. The estimated premium will therefore be affected by the particular movements of share prices on the stock market and the degree of efficiency with which the stock market provides information on the cost of raising capital.¹⁷

Fortunately in the cases presented here the premium has been calculated for the limited partnerships subsequent to the purchase of the portfolio of flow-through shares by the partnership.¹⁸ The results of the analysis are presented in table 2 for five CMP resource limited partnerships and two National Exploration Fund limited partnerships. Combined they represent

¹⁷ When the premium is measured using the prices of the stock as it is traded *after* the issue has been sold and the tax benefits separated from it, the share price at that time should reflect the impact of the additional shares of the company on the market. The price impact should be the same as if normal shares had been issued.

¹⁸ In the case of the CMP Resource Partnerships, the average premiums on the portfolios of the various partnerships were estimated by the staff of Dynamic Fund Management Ltd., the parent corporation of CMP Funds Management Ltd. The premium on the National Exploration Fund limited partnerships was obtained by comparing the value of the expenditure commitments with the market value of the shares in September 1988 approximately six months following the marketing of the funds. The estimates of the market value of the shares were calculated by Skeltrac Resource Management Corporation of Toronto, Canada, the promoter of the funds. The market value of the share(s), net of the tax features, from actual market data *after* the flow-through shares have been sold was used to measure the premium. This approach should obtain an accurate estimate of what would be the value of ordinary shares of these corporations without the tax features.

over \$500 million in funds raised to purchase flow-through shares. In both sets of estimates presented in this table the assumption is made that the resource companies would never be taxable. It follows that the deductions have no value if they are left in the firm. Nor would the deductions if held by the firm have any revenue cost to the government.

In the first set of estimates it is assumed that the capital gains tax is levied on the investor when the shares are sold. In that situation we find that the weighted average value of E is 1.83. That implies that there is \$0.83 of additional revenue loss incurred for each \$1.00 of net benefits received by the firms.

In the second set of estimates it is assumed that capital gains tax is not paid at the time the shares are sold. In that case the average value of E is increased to 2.68, and the average additional revenue cost increases to \$1.68 per \$1.00 of net benefit received by the firms. For most of the cases it is the latter situation that is assumed in the pricing and marketing of the flow-through shares that make up the portfolios analyzed here. As in the case of limited partnerships the revenue costs per dollar of incremental benefits are substantial.¹⁹

CONCLUSIONS

To substitute for refundability of the value of tax losses, the taxation authorities in Canada have attempted to make the flow-out of those losses to investors somewhat easier. Even though limited partnerships and flow-through shares have become well-known and well-used financial instruments, this study indicates that their efficiency as financial instruments appears to be poor. The reason for this is that there are significant transaction and risk costs associated with these tax shelter vehicles. Even when E is significantly greater than 1, there is no mechanism for controlling the amount of the tax deductions that can be used up to bring about the transfer of the tax benefits. The firm will sell its tax deductions as long as it can get a greater amount than the value it gets by using them to reduce its own taxable income.

The instruments examined here required from about \$1.80 to \$2.70 of tax revenues to give the developer or resource company an additional \$1.00 of net benefits. It is clear that with this level of inefficiency the taxation authorities would do well to consider other methods of bringing about the refundability of the tax losses. Alternatively, they might consider eliminating the tax incentives that give rise to the tax losses that create the demand for such tax shelter activity.

¹⁹ The detailed calculations of the flow-through share cases can be obtained from the author.