

# Introduction to Finance



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## Chapter 5

# *Taxation and Investment Returns*

**“We don’t pay taxes, only the little people pay taxes.”** — *Leona Helmsley* (1920 - 2007), former New York hotel magnate. *The New York Times* (July 12, 1989) – quoted by a housekeeper during Helmsley’s trial for tax evasion. In March 1992, Mrs. Helmsley, once the regal proprietress of the Helmsley Palace Hotel in New York, was sentenced to four years’ imprisonment. Helmsley’s tyrannical behavior earned her the nickname, the “Queen of Mean.”

**“This is a question too difficult for a mathematician. It should be asked of a philosopher.”** – Albert Einstein, about filling out his income tax form, 1944.

**"The difference between tax avoidance and tax evasion is the thickness of a prison wall."** – Denis Healey (British Labour politician. Secretary of State for Defence 1964 to 1970 and Chancellor of the Exchequer 1974 to 1979.)



## **In Chapter Five We Learn:**

- 1. Why is taxation important for financial analysis?**
- 2. What are the similarities and differences between Net Income and Taxable Income?**
- 3. Which financial measures determine Net Income, Taxable Income, and cash-balance changes for a business over a year?**
- 4. Several tax rules determine “tax liability” but otherwise have no impact on a firm’s cash balance. What are these rules?**
- 5. What is the "cost" of a \$1 tax deductible expense?**
- 6. What types of income are taxed at what rates?**
- 7. How can a firm take depreciation deductions over time upon the purchase of a depreciable asset?**

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### (5.1) Introduction

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Yes, you really have to pay. It is a cruel fact that often taxes are an important component of any complete financial analysis for either natural individuals or corporations. For this reason, it is important that any financial analyst have some familiarity with not only taxation principles, but also with some of the actual tax rules. Of course, the only true authoritative source on income taxation is the Income Tax Act itself. It is not possible in a short chapter to adequately do justice to the intricacies, details, and complexities of this piece of legislation and its associated regulations. Instead, in this chapter, we summarize the essential aspects of income taxes. In particular, we focus on those aspects of income taxation that are important to corporations in their business activity or investors for their investments.

Taxation is always a moving target. By the time this document reaches your eyes, it will undoubtedly be the case that some of the material is obsolete or the details have changed. It is important, therefore, that you do not use this chapter as an authoritative source with which to do detailed tax planning. You can use this document as an introduction to tax principles and as an opportunity to begin to understand tax rules and how they impact businesses and investors in their investment decisions. Before you do anything rash (like buy \$1,000,000 of preferred shares because of tax advantages), you should consult the most recent Income Tax Act (the act is periodically updated, most often after the federal government's budget which is typically released in Canada in February) or a tax professional. Irrespective of this caution, in writing this document, we tried to be as accurate and complete as possible. Rather than as an authoritative source of tax detail, the use of rates and specific rules as of tax year 2014 is intended to highlight to the reader the importance of using current tax details in financial analysis.

While the body of this chapter has been updated for current tax rules, the problems at the end of the chapter have not. Tax rates and tax credits that applied when these problems were originally written remain in these questions. Some of the rates and credits might not be recognizable to you.

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Don't be overly concerned, the general tax calculations and methodologies remain appropriate even if rates have changed.

We discuss the Income Tax Act in two primary sections: corporate and personal taxation. In the following two sections we summarize these topics respectively.

### (5.2) Corporate Taxation

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The basic problem in corporate taxes is the determination of tax liability for a given tax year. There are three principal steps in this calculation: taxable income, the income tax rates, the calculation of tax liability from taxable income with the appropriate rates. Tax liability is the appropriate tax rate times taxable income. Let us begin with taxable income.

#### 5.2.1 Taxable Income

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**Taxable Income: 12 Minutes**

Taxable income is,

Net Sales

- less Costs of Goods Sold,
- less General and Administrative Expenses (excluding depreciation),

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- plus the taxable portion of *realized* net capital gains (gains less losses less purchase and sale expenses),
- less depreciation for tax purposes (Capital Cost Allowance in Canada)
- less interest expense,
- less application of losses from past years,

EQUALS TAXABLE INCOME.

The first thing that you should note is that taxable income is not the same as net income for financial statement purposes. However, the commonality between these versions of “income” is typically substantial.<sup>1</sup> The calculation of taxable income begins with “profit.” However, the Income Tax Act (being the delightful document that it is), never defines this term. Canada Revenue Agency (the department of the federal government charged with collecting tax) interprets profit as the portrayal of income on “sound commercial principles.” They generally allow financial statement presentation of sales, less costs of sales, less administrative and general expenses (without depreciation), less interest as the principal components of taxable income. Depreciation is excluded from expenses because the government has its own *tax deduction* for depreciation – capital cost allowance in Canada.

Anything that is subtracted in the calculation of taxable income (i.e., reduces taxable income) is a “tax deduction,” or equivalently, this expense is said to be tax *deductible*. Generally, a tax-deductible expense is the tax equivalent of an expensable expenditure for financial statement purposes (i.e., it appears on the income statement as an expense).

If a firm purchases an asset (a financial asset, a depreciable asset, land etc.) and sells it later at a higher price, if the sale is not the focus of the firm’s business practice,<sup>2</sup> it has incurred a capital gain. For tax purposes, the capital gain is calculated net of expenses incurred in both the purchase and the sale. The net amount received upon sale of the asset (after transaction costs and

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<sup>1</sup> Schedule 1 of a T2 corporate income tax return reconciles net income for financial statement purposes with taxable income for taxation purposes. See CRA website for schedule 1.

<sup>2</sup>For firms in the business of buying and selling a particular asset, sale price above original cost is treated as income for tax purposes.

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commissions) less the expenditure to purchase the asset (including transactions costs and commissions) is the realized capital gain for tax purposes. Notice that the firm must actually sell or dispose of the asset for the capital gain to be *realized*. For example, if a firm purchases a financial asset and its market value increases, this amount is not generally taxed until the asset is sold. Only a portion of the realized capital gain (net of expenses) is included in taxable income. This fraction is referred to as the inclusion rate. Currently, the inclusion rate for realized capital gains<sup>3</sup> is 50%.

Instead of financial statement depreciation, the Income Tax Act permits *Capital Cost Allowance* (CCA). You can think of CCA as the mandated method of depreciation for tax purposes. Capital cost allowance can only be taken on *depreciable* assets. What constitutes a depreciable asset is never defined in the Income Tax act. However, Canada Customs and Revenue Agency treats most of the assets that you would think of as being subject to economic depreciation as being depreciable. Financial assets and land are not depreciable. Assets that are not depreciable are referred to as non-depreciable assets.

With respect to our discussion of capital gains, there is no such thing as a capital loss on depreciable assets for tax purposes. The government expects the value of depreciable assets to fall over time, and they allow a deduction for this “expense” through the CCA system. On the other hand, there are taxable capital gains on depreciable assets. If a firm purchases a depreciable asset (i.e., machinery and equipment for example) and sells it for a capital gain (net of expenses) then it has incurred a taxable capital gain. With respect to non-depreciable assets (i.e., financial assets and land), both capital gains and capital losses are possible.

For a given tax year, firms determine their realized capital gains and losses on both non-depreciable and depreciable assets. If the total of these amounts is positive, 50% of this amount (less, possibly, capital losses from prior years) is included in taxable income as described above. On the other hand, if this amount is negative, the firm can do one of two things. If in the prior three tax years,

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<sup>3</sup> The federal budget of 2000 reduced the inclusion rate from 75% to 66 2/3%. The budget of 2001 reduced the inclusion rate to 50%.

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the firm has reported positive capital gains, the firm can open these income tax returns and apply the current years' capital loss against prior year's capital gains (of course, this amount cannot be negative). The effect of doing this is to reduce taxable income in the prior year (or years), which then generates an immediate tax refund (or at least a reduction of taxes payable). On the other hand, any amount of the current year's capital loss that cannot be applied to reduce capital gains from the prior three years can be applied in *any* future year to reduce net capital gains.

### 5.2.2 Loss Carry Forwards and Carry Backs

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#### **Notes on Calculating TI: 41 Minutes**

As an example of these rules, suppose that last year, Corporate Financial Consulting Corporation (CFC) had a realized capital loss in the amount of \$100,000. CFC had no prior realized capital gains, and therefore, they were unable to apply this loss for a tax refund from prior year's tax payments. This year, CFC has a realized capital gain of \$200,000. For the current tax year, CFC's taxable capital gain is, therefore,  $0.50 \times (200,000 - 100,000) = \$50,000$ . The capital loss from last year can be used to reduce taxable capital gains this year with the result that this year's tax-bill for CFC will be lesser than otherwise.

Business profits (or losses) of a firm for tax purposes is net sales less costs of sales less general and administrative expenses (before depreciation) less CCA less interest. If a firm has a business loss, it can open its tax return from any one of the past 3 years and apply this loss against reported taxable income. This reduction generates a tax refund or a reduction in the firm's taxes payable.



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In addition, unused business losses can be applied against taxable income in any of the next twenty years to reduce a firm's taxes payable.

### 5.2.3 Interest and Dividends

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Interest paid is tax deductible. However, in many loans, payments are composed of an interest portion and a principal reduction portion (repayment of a portion of the amount borrowed). Only the interest portion is deductible. In the next chapter of this manuscript, we demonstrate how to decompose the payments of a term loan into the interest and principal portions.

There are two important points to make about the payment of dividends by corporations. First, corporations get no deduction for dividends that they pay in the calculation of taxable income. In other words, dividends paid by a corporation are out of after corporate tax dollars. Second, dividends that a Canadian corporation receives from another Canadian corporation are effectively not taxed. These dividends are taxed in the hands of the second corporation's shareholders only when they are once more paid out as dividends.



**Calculating TI Cont'd: 7 Minutes**

## 5.2 4 Example of Calculating Taxable Income

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As an example of the determination of taxable income for a corporation, consider the example of Corporate Financial Consulting Ltd., which is a B.C corporation with the following characteristics:

Income from operations	\$1,000,000
Loan payments	\$300,000 (\$100,000 is principal repayment)
Dividends paid	\$200,000
CCA claimed	\$150,000
Dividends received from a wholly-owned Can. subsidiary	\$100,000
capital losses on sales of securities	\$300,000 (securities' sale price was \$750,000)
capital gain on sale of production machinery	\$400,000 (machinery sale price was \$500,000)

The following table shows the calculation of CFC's taxable income:

Operating Income	\$1,000,000
interest expense	(200,000)
CCA	(150,000)
taxable capital gain	50,000
Taxable Income	\$700,000

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In this example, only the interest portion of the loan payment is deductible. Dividends paid are non-deductible and dividends received are not included in taxable income. Net capital gains equal the gain on the sale of machinery less the loss on financial assets; 50% of this value is included as taxable income.

## 5.2.5 The Rate of Taxation

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### **2015 Corporate Tax Rates: 23 Minutes**

The second step in the determination of taxes payable for a corporation is calculation of the appropriate tax rate. The rate of tax for a corporation is determined as the federal rate less a provincial abatement less any allowed reductions (the small business deduction and a new deduction for all firms starting in the tax year 2001) plus provincial income tax.

Federal and provincial tax rates change frequently, though the general system is relatively stable. As of 2018, the basic corporate federal tax rate is 38 percent less an abatement of 10 percent (in recognition that firms also pay provincial taxes). The federal tax rate for general business is, therefore, 28%. The Income Tax Act entitles most firms to either a rate reduction or a deduction that reduces their rate of taxation.<sup>4</sup> In addition, on the first \$500,000 of active business income (i.e., not investment income or capital gains), the federal tax rate for Canadian-controlled private corporations (CCPC) is reduced by 18%. For active business income above \$500,000 for a CCPC, for any amount of active business income for a Non-CCPC or any amount of investment income for a Non-CCPC (interest, dividends from Non-Canadian Corporations, and rental income in many but not all cases), the rate reduction is 13% rather than 18%. In British Columbia, the 2018 provincial corporate tax rate is 12% for most businesses but 2% on the first \$500,000 of active business income for CCPCs. The following table gives the total tax rate for a BC corporation for 2018.

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<sup>4</sup> The exception to this generality is investment income for CCPCs.

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### Corporate Tax Rates 2018

Tax Item	Active Business Income to \$500,000 for CCPCs	Active Business Income Above \$500,000 for CCPCs or for any amount of Active Business Income for non-CCPCs	Investment Income for CCPCs <sup>5</sup>	Investment Income for non-CCPCs
Federal tax rate	38.00%	38.00%	38%	38.00%
Abatement for Prov. Tax	10.00%	10.00%	10%	10.00%
Net Fed. tax after abatement	28%	28%	28%	28%
Federal Surtax	-	-	-	-
Small Business Deduction	18%			
Rate Reduction		13%		13%
Refundable Tax <sup>6</sup>			10.7%	
B.C. Provincial Tax	2%	12%	12%	12%
Combined Tax Rate	<b>12%</b>	<b>27%</b>	<b>50.7%</b>	<b>27%</b>

The small business deduction is not available for CCPCs with taxable capital (like invested capital but for tax purposes) employed in Canada of more than \$15 million. CCPCs with taxable capital employed in Canada between \$10 million and \$15 million have reduced access to the small business deduction.

The tax rate on taxable capital gains (after the inclusion rate) is  $38\% - 10\% + 12\% = 40\%$ .

<sup>5</sup> This tax rate applies to investment income other than capital gains and dividends from Canadian corporations.

<sup>6</sup> If a corporate pays investment income to shareholders as dividends then this tax is effectively not paid. Otherwise, this tax accumulates in what is called a Refundable Dividend Tax on Hand account. When a corporation pays dividends to shareholders the refund is a maximum of 38 1/3% of dividends paid. In this case, the corporate tax rate on investment income is  $49.7\% - 38.333\% = 11.33\%$ . Of course, in addition, shareholders must pay personal tax on dividend received.



**2015 Capital Gains Tax Rate: 1 Minute**

### 5.2 6 Tax Liability

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Calculate tax liability as the total effective tax rate from the above table times taxable income. In the example, that we began above, suppose that the firm is publicly traded (thus, a non-CCPC). Taxes payable is then,  $0.27 \times (\$650,000) + 0.4 \times \$50,000 = \$195,500$ . This business has active business income of \$650,000 and a taxable capital gain of \$50,000 (after the inclusion rate) for taxable income of \$700,000. The tax rates on the active business income and the realized capital gain differ: 27% and 40%, respectively.

On the other hand, suppose that the business in our example is a CCPC. Then, the tax rates are 12% on the first \$500,000 of active business income, 27% on active business income above \$500,000, and 40% on the taxable capital gain. In this case, the tax liability is:

$$0.12 \times \$500,000 + 0.27 \times (\$650,000 - \$500,000) + 0.40 \times \$50,000 = \$120,500.$$

As a final observation on the calculation of taxes payable, you should also recognize that there is also a small set of *investment tax credits* available for corporations. Rather than a reduction of taxable income (i.e., before the tax rate is applied) an investment tax credit is a reduction in taxes payable (i.e., after the tax rate is applied). There is an investment tax credit in the amount of 15% of the expenditure for certain qualifying investments that are made in one of the Atlantic provinces or in the Gaspé region of Quebec. In addition, there is a tax credit for qualifying research and development expenditures. The tax credit is 35% of the expenditure for Canadian-controlled private corporations, 20% for other corporations, and 30% for these other corporations if these

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expenditures are made in one of the Atlantic provinces or in the Gaspé region of Quebec. In the 2000 B.C. provincial budget, the government introduced a 3% investment tax credit to reduce the cost of new manufacturing and processing assets. There are also investment tax credits for qualifying mineral exploration expenditures and a refundable tax credit for film or video production services.

### 5.2 7 Cash Balance Changes

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Because our theory of value—discounted cash-flow analysis—calls for discounting future predicted cash flows, it is important to recognize that many of the above described tax rules have no cash effects in and of themselves. Their only effect on cash is in the determination of tax liability (which does have cash-flow effects). As an example of the determination of *cash balance changes*, let us consider the hypothetical firm, Corporate Financial Consulting, described in the preceding subsection. In our treatment of this example, let us assume that EBITDA has been adjusted for accounting accruals, and therefore, reflects a cash-flow number (which is generally not the case). For the purpose of this calculation we presume that Corporate Financial Consulting Ltd is a non-CCPC (that is, a public company).

#### **Change in Cash Balance for Corporate Financial Consulting**

EBITDA (cash)	\$1,000,000
Dividends received	\$100,000
Asset sales	\$1,250,000
Less:	
Loan payment	(\$300,000)
Dividends paid	(\$200,000)
Taxes paid	(\$195,500)
<hr/>	
Change in Cash Balance	\$1,654,500

In this example, the tax rules have effects on the cash balance of this firm only to the extent that these rules affect the determination of the tax liability. The rules themselves do not represent

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actual cash changes in the firm. Notice, for example, that CCA is not represented in the above calculation of the change in CFC's cash balance. CCA is a non-cash charge to taxable income, it has no cash effects other than its effect on the determination of taxes payable. Also, in the above table, because we are measuring cash balances, the increase in cash balance associated with the sale of assets is the sale price and not the capital gains (or loss) amount.



**Example of NI, TI, Change in Cash Balance: 31 Minutes**

### 5.2 8 The “Cost” of a \$1 Tax Deductible Expense

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The effective cost of a marginal dollar that a firm spends in the pursuit of revenue is not the full amount of the dollar because of tax effects. If the dollar is expensable (i.e., it appears as an expense in the income statement) the “cost” of the expense is the \$1 less the reduction in taxes that arises because the expense is tax-deductible (i.e., the \$1 expense reduces taxable income by a dollar). The reduction in taxes payable is the firm's tax rate times the expense. In the case of CFC, the benefit of tax-deductibility of the expense is  $0.27 \times \$1 = 0.27$ . The after-tax cost of an expensable dollar to CFC is  $(1 - 0.27) \times \$1 = \$0.73$ . More generally, the after-tax cost of a deductible expense is the amount of the deduction times one minus the tax rate.

On the other side of the income statement, we might ask the question: “What is the after-tax benefit of a marginal dollar of revenue?” Because revenue is taxable, the benefit is not the revenue itself. The marginal effect on corporate cash balances is the marginal revenue times one minus the tax rate. In the case of CFC, the benefit of \$1 in revenue is  $(\$1)(1 - 0.27) = \$0.73$ .

## 5.2 9 The Capital Cost Allowance System

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Expenditures that firms make on fixed assets (plant and equipment, for example) are not expensable for financial statement purposes or deductible for tax purposes. Instead, these expenditures are amortized over time. In the case of financial statements, the amortized amount in a period is called depreciation. In taxation, the government allows a “capital cost allowance” in Canada (CCA) instead of depreciation. Presumably, the government requires CCA rather than financial statement depreciation because of the otherwise adverse incentive for firms to exaggerate financial statement depreciation (which is at their discretion) to reduce their taxes. In this subsection, we describe the generalities of the CCA system in Canada. Because CCA reduces taxable income (even though it is a non-cash charge) it can be an extremely important component of the benefits associated with depreciable real asset investment. Recall that a depreciable asset is not defined in the Income Tax Act but for administrative purposes it typically corresponds to those assets that you would normally think of as being subject to depreciation. Financial assets and land are non-depreciable, and therefore, there is no CCA for these assets.

In most cases, CCA is not taken on individual assets but on prescribed classes of similar assets. An exception is multiple unit residential properties where CCA is taken on individual buildings. Government Income Tax Regulations establish asset classes and CCA rates. These classes are referred to as CCA classes. When a taxpayer has several assets in a class, they are treated as a unit with respect to the calculation of CCA. Also, for most CCA classes, the maximum CCA that may be claimed in a year is calculated on the declining balance of the asset class. The declining balance of the asset class is called the *undepreciated capital cost* of the asset class (i.e., UCC balance).

Common CCA classes and their associated declining balance rate (other than in the year of acquisition) are given in the following table. A more complete listing is available in appendix VII of “Introduction to Federal Income Taxation in Canada,” by R.E. Beam and S.N. Laiken, CCH Canadian Limited Publishers.



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<b>Asset Class</b>	<b>CCA Rate</b>	<b>Description of Class</b>
1	4 %	most buildings or other structures, including the component parts (like plumbing, heating, and air conditioning)
3	5 %	data communications equipment
6	10 %	fences and other structures related to properties
7	15 %	boats, fittings, ships
8	20 %	miscellaneous tangible capital property and machinery not included in other classes
9	25 %	Aircraft
10	30 %	automotive equipment, and general purpose data processing equipment
10.1	30 %	passenger vehicles
12	100 %	tools or utensils costing less than \$200
16	40 %	automobiles for lease or rent
17	8 %	data communications switching equipment
31	5 %	multiple unit residential buildings
32	10 %	multiple unit residential buildings (purchased before 1981)
35	7 %	railway car
43	30 %	manufacturing and processing equipment
45	45%	computer equipment
46	30%	data network infrastructure equipment

CCA classes 43.1 and 43.2 provide accelerated rates of 30% and 50% respectively for eligible investments that encourage efficient fossil fuel use and renewable and alternative energy sources. For investments after February of 2003, the federal budget extends eligibility to certain fixed location fuel cells and related equipment.

Capital cost allowance for most asset classes (but not all asset classes) is calculated on the declining balance of the asset class. The balance to which the rate is applied is the opening-balance of the asset class (the undepreciated capital cost, UCC) plus one half of net additions to the asset class (as long as this value is positive). For the tax year at hand, net additions is the sum of the purchase prices of assets for the class (plus transactions costs) less the sum of the disposal values of assets for the class (less transactions costs). The disposal value for an asset is the lesser of the sale price (less transaction costs) and the original cost. If the sale price is greater than the original cost, the firm has incurred a taxable capital gain (and there are associated tax consequences). CCA (should you choose to take it) is the maximum CCA rate for the class, times the UCC balance at the

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beginning of the tax year plus one-half of net additions (if this value is positive). You might choose not to take CCA if you have no taxes to be reduced in the current year or in any of the prior 3 years (i.e., no benefit associated with carrying losses back to prior tax years). In this case, you should probably not use the CCA but apply it in a future year when you may reduce taxes payable. UCC balance at the end of the year is UCC balance at the beginning of the year plus net additions (note, this is net additions not one half of net additions) less CCA taken for the tax year.

As an illustration of these calculations, consider a firm that has a UCC balance for the beginning of the tax year for class 10 in the amount of \$1,000,000. Over the year they purchase additional class 10 assets in the amount of \$200,000 and they sell class 10 assets in the amount of \$75,000 (which is lesser than the original cost). What is the maximum CCA that the firm can take for class 10 this tax year?

### **Illustration of CCA for Positive Net Additions to UCC**

Opening Balance UCC	\$1,000,000
One half net additions	\$62,500
CCA	$0.26 \times (1,062,500) = \$276,250$
Ending Balance UCC	$1,000,000 + 125,000 - 276,250 = \$848,750$

If purchases less sales for assets in a class is negative (i.e., there are more sales than purchases), then the UCC balance is reduced by the full amount of disposals less acquisitions. In our above example, suppose that purchases are \$75,000 and disposals are \$200,000 (which is less than the original cost of these assets). What is the maximum CCA in this case?

### **Illustration of CCA for Negative Net Additions to UCC**

Opening Balance UCC	\$1,000,000
Net Disposals	\$(125,000)
CCA	$0.26 \times (875,000) = \$227,500$
Ending Balance UCC	$1,000,000 - 125,000 - 227,500 = \$647,500$

## 5.2.10 Collapsing CCA Classes

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Because of the declining balance methodology, it is possible that incremental CCA arising from the purchase of a depreciable asset can continue into the indefinite future. In fact, incremental CCA can continue even if the asset is salvaged at the end of its useful life because CCA is taken on classes of assets rather than individual assets. However, there are circumstances where the disposal of a depreciable asset causes a CCA class to be zeroed (i.e., the class is said to be “collapsed”) with associated tax consequences.

First, if the last asset of a CCA class is disposed of, and yet there remains a positive UCC balance for the asset class, the firm is said to have had a “terminal loss.” In this case, it is presumably the case that actual economic depreciation has exceeded CCA-mandated depreciation, and therefore, to compensate the firm for this depreciation not taken, the firm may deduct the UCC balance from taxable income. If the firm is in a tax-paying position, the reduction of taxes payable, which arises from the terminal loss deduction, is the corporate tax rate times the terminal loss. When a terminal loss is taken, the UCC balance for the asset class is zeroed.

As an example of a terminal loss calculation consider the following assumed facts. A firm has a beginning of year UCC for asset class 7 in the amount of \$100,000. There is only one asset in the class and it is disposed in the current year for \$25,000. The corporate tax rate is the small business rate of 13.5%. The firm is in a tax-paying position. By how much is taxes payable reduced because of the terminal loss deduction? The terminal loss deduction is \$100,000 less \$25,000. The reduction in the firm’s tax bill is  $0.135 \times 75,000 = \$10,125$ .

Second, if the excess of disposals over acquisitions exceeds the UCC balance, the government will “recapture” past CCA deductions (even if there remain assets in the asset class). In this case, it appears that economic depreciation has not been as extensive as presumed by the mandated CCA rate for the asset class. In a sense, the government has allowed too much in the way of deductions

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for depreciation. The government recaptures these deductions by requiring the inclusion of the excess of disposals minus acquisitions less the UCC balance into taxable income. The UCC balance for the asset class is set to zero when CCA is recaptured.

To illustrate some of the tax effects associated with asset disposal, consider the following assumed facts. The opening balance for the CCA class is \$10,000. There are two assets in this asset class. During the tax year, the firm sells one of the assets for a net price of \$55,000. The original cost of the asset was \$20,000. The tax rate is the small business tax rate of 13.5%. What is the incremental effect on the firm's tax bill as the result of this sale?

First, you should note that as the result of the pending collapse of the CCA class, the firm loses the ability to reduce taxes into the future on the UCC balance of \$10,000. In the current tax year, there are two effects of the asset disposal. First, the firm realizes a capital gain. The incremental effect on taxes payable is  $0.39 \times 0.5 \times 35,000 = \$6,825$ . In this calculation, recall that the tax rate on the taxable portion of realized capital gains is 39% (28%+11%) because capital gains are not active business income. Second, the firm has a recapture of depreciation of  $\$20,000 - \$10,000 = \$10,000$ . Notice that the UCC balance is reduced by the lesser of the sale price and the original cost. In this case, the original cost is less than the sale price. Nonetheless, there is a recapture of depreciation in the amount of \$10,000. The incremental increase in taxes payable is  $0.135 \times 10,000 = \$1,350$ . The total incremental effect on the firm's tax bill is  $\$6,825 + \$1,350 = \$8,175$ .

### **(5.3) Personal Taxation**

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As with corporate taxes, the first step in the determination of personal taxes payable is the calculation of taxable income. Taxable income is calculated as shown in the following table.

## Taxation and Investment Returns

### Personal Taxable Income Worksheet

*Total Income:*

- salaries, wages, other remuneration including gratuities,
- rental income,
- commissions,
- value of boarding and lodging,
- other fringe benefits,
- scholarships, fellowships, bursaries (above \$500),
- pension income,
- unemployment insurance benefits,
- net income from a sole proprietorship or partnership,
- alimony received,
- interest and other investment income (i.e., for example, dividends received from non-Canadian corporations),
- 50% of realized capital gains,
- grossed up dividends (received from a Canadian corporation),
- other income.

*less Deductions:*

- contributions to tax-sheltered plans (e.g., registered retirement savings plans)
- union and professional dues
- interest expense incurred for the purpose of earning income
- child care expenses
- moving expenses (subject to restrictions)
- alimony paid (*ouch!*)

Equals

**TAXABLE INCOME**

### 5.3.1 Investments and Taxable Income

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Your investment activity has a number of effects on taxable income. First, all interest income is included in taxable income. However, interest paid is deductible when funds are borrowed for the purpose of earning investment income. For example, if you borrow in a mortgage for the purpose of purchasing your principal residence, the interest you pay on your mortgage is not tax-deductible (because the purpose of the borrowing is not for the purpose of earning investment income). In addition, interest is not tax deductible for investments made in tax sheltered plans. On the other hand, if you borrow (in a mortgage, for example) to purchase a residential property that you will rent, the interest that you will pay is tax deductible. In this case, the purpose of your borrowing is to generate an investment return. If you borrow to purchase common shares, even if the shares

## *Taxation and Investment Returns*

currently offer no dividends, the interest that you pay is tax deductible. While the common shares offer no current income return, you purchase the shares with the intent (presumably) of receiving dividend income at some time in the future, and therefore, the interest is tax-deductible.

The inclusion rate of 50% for realized capital gains is the same for individuals as it is for corporations. If you receive dividends from a non-Canadian corporation, the Canadian dollar equivalent of these dividends is included dollar for dollar into taxable income. On the other hand, you must include 138% of dividends received from a Canadian corporation in taxable income. The purpose of this requirement is not to penalize Canadian corporations. The government takes away with one hand (i.e., the gross-up rule) but then gives back with the other through a dividend tax credit. The effect of the dividend gross-up and the dividend tax credit is to reduce the effective tax rate on dividends compared to interest income. Presumably, the reason for the preferential tax treatment of dividends compared to interest income is to offset the effect of “double taxation.” Corporations get no deduction for the dividends they pay, and therefore, dividends are paid out of after-tax corporate earnings. On the other hand, because there is a deduction for interest paid by corporations, interest is paid out of before-tax earnings. A reduced tax rate on dividends offsets this double taxation.

### 5.3.2 Personal Federal Tax Rates

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Federal taxes are determined by applying three rates:

Taxable Income (2018)	Federal Tax Rate
up to \$46,605	15%
\$46,606-\$93,208	20.5%
\$93,209-\$144,489	26%
\$144,490-\$205,842	29%
\$205,843 & above	33%

## *Taxation and Investment Returns*

To illustrate the calculation of federal taxes, consider the following assumed facts. In the 2019 tax year, you had interest income of \$10,000, dividend income of \$20,000 from Canadian public corporations (eligible dividends), dividend income of \$5,000 from non-Canadian corporations, and a realized capital gain on the sale of securities in the amount of \$300,000. You have no other sources of income.

Taxable income is,

Interest	\$10,000
Grossed-up Dividends (Can.)	27,600
Dividends (non-Can.)	5,000
taxable cap. Gain	150,000
<hr/>	
taxable income	\$192,600

Because your taxable income exceeds \$144,489, four federal tax rates apply in determining federal tax. Federal tax is **\$6,900.75** on the first \$46,605 of taxable income, **\$9,553.62** on taxable income dollars between \$46,606 and \$93,208, **\$13,333.06** on taxable income dollars between \$93,209 and 144,489 and **\$13,952.10** on taxable income from \$144,490 to \$192,600. Federal tax is, therefore,  $\$6,900.75 + \$9,553.62 + \$13,333.06 + \$13,952.10 = \mathbf{\$43,739.62}$ .

A number of non-refundable tax credits are available that reduce federal taxes. These credits are called non-refundable because they cannot cause federal taxes to become negative and generate a tax refund. The tax credits relate to some of your characteristics as an individual (i.e., age, spouse, disability), or your activities though the year (i.e., pension income, tuition, education, medical, charitable donations). All individuals get a basic federal personal tax credit of \$1,771. In addition, if you received dividends from a Canadian corporation over the year, you get a federal dividend tax credit in the amount of 13.8% of the dividends received (not the grossed-up dividends). In the above example, suppose that you have available only the basic federal personal tax credit and the federal dividend tax credit. We can then calculate *net federal tax*.

### 5.3.3 Net Federal Tax

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Net federal tax is federal tax less the sum of available tax credits. In our example:

Federal Tax	\$43,739.62
Less:	
Basic personal tax credit	\$1,771
Dividend tax credit	\$3,808.8
<hr/>	
Net Federal Tax	\$38,159.82
<hr/>	

### 5.3.4 Provincial Taxation

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Starting in the year 2000 as the result of a tax collection agreement between the provinces and the federal government, provinces now levy their personal income tax as a fraction of *taxable income*. In addition, the provinces have their own systems of tax credits. All of the provinces take advantage of this change by adopting “tax-on-income” systems. The Canada Revenue Agency (formerly Revenue Canada) continues to administer federal and provincial taxes (except in Quebec), and therefore, you calculate your federal and provincial personal taxes on one income tax return. You determine federal tax as previously – by calculating your taxable income, applying the appropriate federal tax rates and then subtracting federal non-refundable tax credits. Your provincial tax is calculated in a similar way, but with BC provincial tax rates and credits. BC tax credits for most families are approximately 50% of the federal tax credits.

BC provincial taxes in 2018 are determined by applying five rates:



## *Taxation and Investment Returns*

Taxable Income (2018)	BC Tax Rate	Incremental \$Tax to Top of Bracket
up to \$39,676	5.06%	\$2,007.60
\$39,677 - \$79,353	7.70%	\$3,055.13
\$79,354 – \$91,107	10.5%	\$1,234.17
\$91,108 – \$110,630	12.29%	\$2,399.38
\$110,631-\$150,000	14.7%	\$5,787.39
\$150,001 & over	16.8%	

Because your taxable income exceeds \$150,000, all six provincial tax rates apply in calculating provincial tax. Provincial tax from the first to the sixth tax bracket respectively is \$2,007.60, \$3,055.13, \$1,234.17, \$2,399.38, \$5,787.39, and \$7,156.8. Provincial tax, which is the sum of these amounts, is \$21,640.47.

A number of non-refundable provincial tax credits are available that reduce provincial tax. In 2019 all British Columbians receive a personal provincial tax credit of \$527. The provincial dividend tax credit is 12% (starting Jan 1, 2019) of the amount of dividends received from Canadian corporations. In our example, the provincial dividend tax credit is:  $0.12 * \$20,000 = \$2,760$ .

### 5.3 5 Net Provincial Tax

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Net provincial tax is equal to provincial tax less the sum of available provincial tax credits. In our example:

Provincial Tax	\$21,640.47
Less:	
Basic provincial tax credit	\$527
Provincial dividend tax credit	\$2,760
Net Provincial Tax	\$18,353.47

## 5.3 6 Tax Liability

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Your tax liability is the sum of Net Federal Tax and Net Provincial Tax,

Net Federal Tax	\$38,159.82
Net Provincial Tax	\$18,353.47
Taxes Payable	\$56,513.29

## 5.3 7 The After Tax Investment Rate of Return

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Most of the above tax rules have cash effects for investors only to the extent that they influence the determination of the tax liability. To illustrate the calculation of an after-tax rate of return, let us suppose in the above example, that your investment at the beginning of the year was \$500,000. In addition your portfolio of investments is your only source of income. What was your after-tax rate of return on your investment for the year? The dollar return on your investment is the net increase in the value of your investment account less tax paid. The dollar return on your investment is composed of:

## *Taxation and Investment Returns*

Interest	\$10,000
Dividends (Can.)	20,000
Dividends (non-Can.)	5,000
Capital Gain	300,000
Taxes Paid	\$56,513.29
Dollar Return on Investment	\$278,486.71

Notice that dividends received from Canadian corporations are not grossed up and capital gains are not diminished by the inclusion rate. The rate of return on your investment is the dollar return (after tax) divided by the amount at risk =  $\$278,486.71/500,000 = 55.70\%$ .

### 5.3 8 Taxes Payable on Investment Income

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The taxes that you pay on investment income differ depending upon the source of the income: realized capital gains, dividends from a Canadian corporation, or interest. If you earn one dollar of income from each of these sources, what is the marginal impact on your taxes payable?

The embedded spreadsheet below calculates marginal tax rates for various sources of investment income and for various tax-brackets for a hypothetical family living in B.C. in 2018/2019 using the above tax rules. The break points for taxable income arise from the federal and provincial tax brackets.



#### **Personal Tax Rates**

This table also shows that one dollar of dividends from a Canadian corporation attracts a lower tax penalty than one dollar of interest income or one dollar of realized capital gains. Of course, the

## *Taxation and Investment Returns*

*effective* tax rate on capital gains is probably smaller than the rate shown in the table because the tax is only paid after the gain is *realized* and the sale of assets can be deferred.

### (5.4) Summary

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Taxes are an important component of most financial decisions, and therefore, any financial analyst must have some familiarity with the tax rules and the impact that they have on investment decisions. Of course, the only true authoritative source of information on income taxation is the Income Tax Act itself. It is not possible in a short chapter to adequately do justice to the intricacies, details, and complexities of this piece of legislation (i.e., its the law). Instead, this chapter summarizes the essential aspects of income taxes for firms in their business activity and for investors in their investment activity

Taxation is always a moving target. By the time this document reaches your eyes, undoubtedly it will be the case that some of the material is obsolete or that some details have changed. It is important, therefore, that you do not use this manuscript as an authoritative source with which to do detailed tax planning. You can use this document as an introduction to the principles of tax and as an opportunity to begin to understand tax rules and how they impact firms in their business decisions and investors in their investment decisions. However, before you do anything rash (like buy \$1,000,000 of preferred shares because of tax advantages), you should consult the most recent Income Tax Act (the act is periodically updated, most often after the federal government's budget which is typically released in February) or a tax professional. Irrespective of this caution, we have tried to be as accurate and complete as possible. Rather than as an authoritative source of tax detail, the use of rates and specific rules as of 1994 is intended to highlight to the reader the importance of using current tax details in financial analysis.

## *Taxation and Investment Returns*

The Income Tax Act is divided into two primary sections: corporate and personal taxation. In this chapter we summarize these topics respectively.

**(5.5) Suggested Readings**

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INCOME TAX ACT, CCH Canadian Limited, 82nd Edition, or The Practitioner's Income Tax Act, 30th Edition (Carswell) or Stikeman Income Tax Act, Annotated, 40th Edition (Carswell)

R.E. Beam, S.N. Laiken and J.J. Barnett. INTRODUCTION TO FEDERAL INCOME TAXATION IN CANADA (B, L & B) 27th Edition, 2006-2007.

CANADA REVENUE AGENCY (CRA) : <http://www.cra.gc.ca>

CANADA TAX CASES (CCH or Carswell), <http://www.canlii.ca>

W.J. Buckwold & J. Kitunen CANADIAN INCOME TAXATION, PLANNING AND DECISION MAKING, 9th Edition, McGraw-Hill Ryerson.

CANADIAN TAX FOUNDATION PUBLICATIONS

INCOME TAX BULLETINS, CIRCULARS AND TECHNICAL NEWS, 2006 Edition, CCH Canadian Limited

J. Magee, Carswell. UNDERSTANDING INCOME TAX, 2006-2007 Edition.

## (5.6) Problems

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### 1. *Corporate tax versus “provision for income tax.”*

The author of this book copied this question from someone. I would like to give credit but, unfortunately, I forget who I copied it from. So, when the creator of this question sees it in this book, he/she can let me know so that I can give credit where credit is due.

Shapiro Ltd. is a small private corporation with headquarters in Newton, B.C. For 1995 Shapiro had net income for financial statement purposes of \$122,666. A component of net income was “provision for income tax” in the amount of \$30,834. This number is an accounting calculation based on net income and does not represent the firm’s actual tax liability. In “other income” (also a component of net income) Shapiro had dividends from a Canadian company in the amount of \$10,000. Shapiro paid \$4,000 in interest and \$7,500 in dividends. Also included in “other income” is an accounting gain net of applicable taxes in the amount of \$8,500 arising from the sale of a depreciable asset. This machine had originally cost \$20,000 and it was sold for \$30,000. Shapiro reported \$10,000 in depreciation for financial statement purposes but had capital cost allowances in the amount of \$15,000. Based on current federal and provincial tax rates determine Shapiro’s tax liability for 1995 (i.e., the amount that Shapiro actually owes the government).



**Solution**

### 2. *Taxes Payable.*

Sales for ILF Ltd. (I Love Finance) during the past year amounted to \$5 million. Gross profits from business operations for the year were \$3 million. General and administrative expenses associated with these operations were \$1 million. The firm reported neither accounting depreciation nor capital cost allowances for the fiscal year. In addition, interest income was \$50,000 and dividends received from a Canadian corporation were \$25,000. ILF’s interest expense was \$100,000. Beyond income from the above sources, the firm sold securities on two occasions during the year, receiving a capital gain of \$650,000 on the first sale but losing \$300,000 on the second. The combined tax rate for ILF (federal, provincial and the surtax) is 45.34%. Determine taxes payable for ILF.

## Taxation and Investment Returns



**Solution**

3. **Personal Taxes and Wealth Increase.**

Suppose that your investments are your only source of income. You buy all of your financial assets at the beginning of the year and you sell them at the end of the year. List and discuss the reasons that your personal taxable income is not necessarily the same as the increase in your wealth over the year.



**Solution**

4. **Taxable Income and Net Income.**

What are the primary reasons that taxable income might not be the same as net income for a corporation.



**Solution**

5. **Taxable Income, Net Income, Cash Balance Change**

ABC Company Ltd is a Canadian company that has a tax rate of 34.12% for 2007. Taxable income before the taxable portion of realized capital gain times this tax rate plus 41.12% times the taxable portion of realized capital gain is tax liability for 2007. ABC paid this tax liability, in the amount \$635,708.4, during 2007. Also, during 2007, ABC did a number of things. They paid dividends to their shareholders in the amount of \$36,000. They received dividends in the amount of \$14,000 from a Canadian corporation. They sold new common shares to new shareholders for a total amount of \$275,000. Their 2007 borrowing was \$Z (incremental, beyond previous year's borrowing). Depreciation for financial reporting



## Taxation and Investment Returns

purposes was \$85,000. They took capital cost allowances of \$131,000. Finally, in early 2007, ABC sold some production equipment for \$180,000 that had originally cost \$120,000 some years ago. ABC is not in the business of buying and selling production equipment. ABC's "Other Income" on their 2007 income statement has two amounts. First, ABC reported an accounting gain, net of applicable taxes, arising from the production equipment disposition in the amount of \$X. Second, they also included in "Other Income" the dividends that they received (described above) from the Canadian corporation. ABC's provision for income tax for 2007 (also an accounting income statement line item) was \$580,000. During 2007 ABC paid interest on debt in the amount of \$42,000. Ignore recapture of depreciation, terminal losses, deferred income taxes, and future tax liabilities in this problem. ABC's 2007 EBITDA (from core operations, before other income) of \$Y was earned in the form of cash. ABC's net income for 2007 was \$1,339,000, their taxable income was \$1,857,000, and the change in their cash balance over 2007 was \$1,820,291.60.

**Required:** Be as accurate as possible with respect to 2007 tax rules. Find, ABC's

- 2007 EBITDA before other income (Y),
- 2007 Accounting Gain on Disposition of Production Equipment (X).
- 2007 borrowing (Z).



### Solution

#### 6. Personal Tax

Today is December 31, 2007. During 2007 you received interest of \$20,000, dividends from a Canadian corporation of \$15,000, dividends from non-Canadian corporations of \$5,000, and realized net capital gains of \$25,000. You had no other sources of income and you had no tax deductions. Your investment at the beginning of the year to earn these amounts was \$200,000. In 2007, your only non-investment tax credits are the federal basic tax credit of \$1,384 and the provincial basic tax credit of \$546.

**Required:** Being as accurate as possible with respect to 2007 personal tax rules (summarized below), determine your 2007 after-tax rate of return on your investments.

Selected Income Tax Information for 2007:

The inclusion rate for net realized capital gains is 50%. The gross-up rule is 145% of dividends received from a Canadian corporation. The Federal and Provincial dividend tax credits are 27.5% and 17.4%, respectively, of dividends received from a Canadian corporation.

#### Federal Tax:

15.5% on taxable income up to \$37,178,  $(0.155 \times 37,178 = \$5,762.59)$

22% on taxable income between \$37,179 and \$74,357,  $(0.22 \times (74,357 - 37,178) = \$8,179.38)$

26% on taxable income between \$74,358 and \$120,887,  $(0.26 \times (120,887 - 74,357) = \$12,097.8)$

29% on taxable income of \$120,888 and above.

#### Provincial Tax:

6.05% on taxable income up to \$34,397  $(0.0605 \times 34,397) = \$2,081.02$

9.15% on taxable income between \$34,398 and \$68,794  $(0.0915 \times (68,794 - 34,397) = \$3,147.33)$

## *Taxation and Investment Returns*

11.7% on taxable income between \$68,795 and \$78,984 ( $0.117 \times (78,984 - 68,794) = \$1,192.23$ )  
13.7% on taxable income between \$78,985 and \$95,909 ( $0.137 \times (95,909 - 78,985) = \$2,318.73$ )  
14.7% on taxable income of \$95,910 and above.



### **Solution**

#### **7. Taxable Income, Net Income, Cash Balance Change**

ABC Company Ltd is a Canadian company that has a tax rate of 34.12% for 2007. Taxable income before the taxable portion of realized capital gain times this tax rate plus 41.12% times the taxable portion of realized capital gains is tax liability for 2007. ABC paid this tax liability, in the amount \$635,708.4, during 2007. Also, during 2007, ABC did a number of things. They paid dividends to their shareholders in the amount of \$36,000. They received dividends in the amount of \$X from a Canadian corporation. They sold new common shares to new shareholders for a total amount of \$275,000. They borrowed \$65,000 beyond previous year's borrowing. Depreciation for financial reporting purposes was \$Z. They took capital cost allowances of \$131,000. Finally, in early 2007, ABC sold some production equipment for \$180,000 that had originally cost \$120,000 some years ago. ABC is not in the business of buying and selling production equipment. ABC's "Other Income" on their 2007 income statement has two amounts. First, ABC reported an accounting gain, net of applicable taxes, arising from the production equipment disposition in the amount of \$32,000. Second, they also included in "Other Income" the dividends that they received (described above) from the Canadian corporation. ABC's provision for income tax for 2007 (also an accounting income statement line item) was \$580,000. During 2007 ABC paid interest on debt in the amount of \$42,000. Ignore recapture of depreciation, terminal losses, deferred income taxes, and future tax liabilities in this problem. ABC's 2007 EBITDA (from core operations, before other income) of \$Y was earned in the form of cash. ABC's net income for 2007 was \$1,339,000, their taxable income was \$1,857,000, and the change in their cash balance over 2007 was \$1,820,291.60.

## *Taxation and Investment Returns*

**Required:** Be as accurate as possible with respect to 2007 tax rules. Find, ABC's

- a.) 2007 dividends received (X),
- b.) 2007 EBITDA (from core operations, before other income) (Y),
- c.) 2007 depreciation, (Z).



### **Solution**

#### **8. Personal Tax**

Today is December 31, 2007. During 2007 your only source of income was interest received of \$30,000, dividends of \$25,000 received from Canadian corporations, \$10,000 of dividends received from non-Canadian corporations, and realized capital gains of \$15,000. You have no tax deductions. Your investment at the beginning of the year to earn these amounts was \$400,000. In 2007, your only non-investment tax credits are the federal basic tax credit of \$1,384 and the provincial basic tax credit of \$546.

**Required:** Being as accurate as possible with respect to 2007 personal tax rules (summarized below), determine your 2007 after-tax rate of return on your investment.

Selected Income Tax Information for 2007:

The inclusion rate for net realized capital gains is 50%. The gross-up rule is 145% of dividends received from a Canadian corporation. The Federal and Provincial dividend tax credits are 27.5% and 17.4%, respectively, of dividends received from a Canadian corporation.

#### **Federal Tax:**

15.5% on taxable income up to \$37,178,  $(0.155 \times 37,178 = \$5,762.59)$

22% on taxable income between \$37,179 and \$74,357,  $(0.22 \times (74,357 - 37,178) = \$8,179.38)$

26% on taxable income between \$74,358 and \$120,887,  $(0.26 \times (120,887 - 74,357) = \$12,097.8)$

29% on taxable income of \$120,888 and above.

#### **Provincial Tax:**

6.05% on taxable income up to \$34,397  $(0.0605 \times 34,397) = \$2,081.02$

9.15% on taxable income between \$34,398 and \$68,794  $(0.0915 \times (68,794 - 34,397) = \$3,147.33)$

11.7% on taxable income between \$68,795 and \$78,984  $(0.117 \times (78,984 - 68,794) = \$1,192.23)$

13.7% on taxable income between \$78,985 and \$95,909  $(0.137 \times (95,909 - 78,985) = \$2,318.73)$

14.7% on taxable income of \$95,910 and above.



### **Solution**

## *Taxation and Investment Returns*

### **9. Personal Tax**

In this question, be as accurate as possible with respect to 2007 personal tax rules. In particular, the gross-up rule is 145% of dividends received from a Canadian corporation. The Federal and Provincial dividend tax credits are 27.5% and 17.4%, respectively, of dividends received from a Canadian corporation. The lowest federal tax rate on taxable income up to \$37,178 is 15%. The lowest provincial tax rate on taxable income up to \$34,397 is 5.7%. Today is December 31, 2007. You have no tax deductions and your only non-investment tax credits are the federal basic tax credit of \$1,339 and the provincial basic tax credit of \$515. The first two parts of this question below are distinct and should be answered independently. Part (c) relates parts (a) and part (b).

(a) During 2007 your only source of income was wages of \$X. You are at the lowest income tax bracket both federally and provincially. Your tax liability for 2007 (net federal tax plus net provincial tax) was \$2700. Determine X.

(b) During 2007 your only source of income was wages of \$Y plus dividends from Canadian corporations of \$8,000. You are at the lowest income tax bracket both federally and provincially. Your tax liability for 2007 (net federal tax plus net provincial tax) was \$1,509.2. Determine Y.

(c) Other than rounding error (that is, within about \$1), verify that X in part (a) equals Y in part (b), which means that “economic income” is greater in part (b) of this question compared to part (a). Explain briefly, why, nonetheless, tax liability is greater in part (a).



### **Solution**

### **10. Personal Tax**

In this question, be as accurate as possible with respect to 2007 personal tax rules. In particular, the gross-up rule is 145% of dividends received from a Canadian corporation. The lowest federal tax rate on taxable income up to \$37,178 is 15%. The lowest provincial tax rate on taxable income up to \$34,397 is 5.7%. Federal and Provincial dividend tax credits are 27.5% and 17.4%, respectively, of dividends received from a Canadian corporation. Today is December 31, 2007. You have no tax deductions and your only non-investment tax credits are the federal basic tax credit of \$1,339 and the provincial basic tax credit of \$515. The first two parts of this question below are distinct and should be answered independently. Part (c) relates parts (a) and (b).

(a) During 2007 your only source of income is wages of \$22,000. You are at the lowest income tax bracket both federally and provincially. What is your tax liability for 2007 (net federal tax plus net provincial tax)?

(b) During 2007 your only source of income is wages of \$22,000 plus dividends from Canadian corporations of \$8,000. You are at the lowest income tax bracket both federally and provincially. What is your tax liability for 2007 (net federal plus net provincial tax)?

## *Taxation and Investment Returns*

- (c) “Economic income” is greater in part (b) above compared to part (a). Explain briefly, why, nonetheless, tax liability is greater in part (a).



### **Solution**

#### **11. Taxable Income, Net Income, Cash Balance Change**

ABC Company Ltd is a Canadian company. They are a non-CCPC for tax purposes with a tax rate of 31% on active business income for 2008. Taxable income before the taxable portion of realized capital gain times this tax rate plus 39.5% times the taxable portion of realized capital gain is tax liability for 2008. ABC paid their tax liability, in the amount \$609,450 during 2008. Also, during 2008, ABC did a number of things. They paid dividends to their shareholders in the amount of \$52,000. They received dividends in the amount of \$20,000 from a Canadian corporation. They sold new common shares to new shareholders for a total amount of \$150,000. Their 2008 borrowing was \$75,000 (incremental, beyond previous year's borrowing). Depreciation for financial reporting purposes was \$99,000. They took capital cost allowances of \$140,000. Finally, in early 2008, ABC sold some production equipment for \$200,000 that had originally cost \$120,000 some years ago. ABC is not in the business of buying and selling production equipment. ABC's "Other Income" on their 2008 income statement is the sum of two amounts. First, an accounting gain, \$48,000, net of applicable taxes, arising from the production equipment disposition, and second, the dividends received (described above) from the Canadian corporation. During 2008 ABC paid interest of \$45,000. Ignore recapture of depreciation, terminal losses, deferred income taxes, and future tax liabilities in this problem. ABC's 2008 EBITDA (from core operations, before other income) of \$X was earned in the form of cash.

**Required:** Be as accurate as possible with respect to 2008 tax rules. Find, ABC's

- 2008 EBITDA before other income (\$X),
- cash balance change over 2008.



### **Solution**

#### **12. Taxable Income, Net Income, Cash Balance Change**

ABC Company Ltd is a Canadian company, a CCPC, that has a combined provincial and federal income tax rate of 15% on active business income up to \$400,000 and 31% on active business income over \$400,000 for 2008. ABC's 2008 active business income was more than \$400,000. In addition, the taxable portion of realized capital gain is taxed at the rate of 39.5% for 2008. ABC paid their tax liability, in the amount \$570,700, during 2008. Also, during 2008 ABC did a

## *Taxation and Investment Returns*

number of things. They paid dividends to their shareholders in the amount of \$42,000. They received dividends in the amount of \$22,000 from a Canadian corporation. They sold new common shares to new shareholders for a total amount of \$184,750. They borrowed \$85,000 beyond previous year's borrowing. Depreciation for financial reporting purposes was \$105,000. They took capital cost allowances of \$135,000. Finally, in early 2008, ABC sold some production equipment for \$300,000 that had originally cost \$100,000 some years ago. ABC is not in the business of buying and selling production equipment. ABC's "Other Income" on their 2008 income statement is the sum of two amounts. First, an accounting gain, \$120,000, net of applicable taxes, arising from the production equipment disposition and, second, the dividends received (described above) from the Canadian corporation. During 2008 ABC paid interest on debt in the amount of \$45,000. Ignore recapture of depreciation, terminal losses, deferred income taxes, and future tax liabilities in this problem. ABC's 2008 EBITDA (from core operations, before other income) of \$Y was earned in the form of cash.

**Required:** Be as accurate as possible with respect to 2008 tax rules. Find, ABC's

- a.) 2008 EBITDA before other income, Y,
- b.) cash balance change over 2008.



**Solution**

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