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The Economic Costs of Capital Gains Taxes

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Executive summary

Capital gains taxes, like all forms of taxation, raise revenues for the government but also impose economic costs. Unfortunately, the cost of capital gains taxes is not limited to the amount of tax collected. Capital gains taxes impose additional costs on the economy because they reduce returns on investment and, thereby, cause individuals and businesses to alter their behaviour. As a result, capital gains taxes have a substantial impact on the reallocation of capital, the stock of capital, and the level of entrepreneurship in Canada.

Reallocation of capital

Capital gains taxes significantly impede the reallocation of capital from older, less profitable, investments to those with higher rates of return. Numerous academic studies have found that investors do indeed lock in their capital in the presence of capital gains taxes and that the “lock-in effect” significantly impedes economic growth. Without the efficient flow of capital, the development of new, potentially profitable, businesses is limited. Given that these new ventures are the engines of productivity, employment, and wealth-creation, capital gains taxes reduce the economic well-being of all Canadians.

Stock of capital

Capital gains taxes have a significant impact on the stock of capital in Canada by increasing the cost of capital to Canadian businesses. Capital gains taxes make capital investments more expensive and thus less investment takes place. A reduced amount of capital has a number of negative consequences including decreases in the productivity of Canadian workers and, ultimately, lower Canadian living standards.

Entrepreneurship and risk-taking

Capital gains taxes have a detrimental impact on the number of entrepreneurs and risk-takers in Canada. Entrepreneurs and their financiers are critical to a successful economy in that they challenge the status quo, advance technology, develop new products and services, create jobs, and increase wealth. These individuals trade-off low current compensation because they expect to generate significant future returns. Capital gains taxes reduce the return that entrepreneurs, venture capitalists, and other investors receive from risk-taking, innovation, and work effort. Lower expected returns decreases the number of entrepreneurs and risk-takers and ultimately reduces investment, technological advances, employment, and overall economic growth.

Compliance costs, administrative costs and tax evasion

In addition to the damaging economic costs of capital gains taxes resulting from changes in the incentives faced by individuals and businesses, capital gains taxes also impose compliance and administrative costs. Compliance costs are incurred by individuals and businesses when they fulfill the recording and filing requirements associated with paying a tax. Administrative costs are expenses incurred by government—and ultimately paid for by citizens—to manage and maintain the tax-collection system. Finally, there are also costs arising from the evasion of capital gains taxes: the resources spent in evading the tax could be put to more productive uses.

Marginal efficiency cost (MEC) of capital gains taxes

Estimates of the marginal efficiency cost (MEC) of both American and Canadian taxes indicate that personal capital income taxes (dividends, capital gains, and interest income) impose substantial costs on the economy. Recent estimates from the federal Department of Finance show that a \$1 reduction in personal capital income taxes (dividends, capital gains, and interest income) increases society's well-being by \$1.30. In addition, these taxes were shown to be much more costly than other types of taxes such as consumption and payroll taxes. As a result, there are economic gains available to Canadians from shifting away from personal capital income taxes.

Recommendation—eliminate capital gains taxes

Given the relative efficiency of other types of taxes, Canadian governments, both federal and provincial, should eliminate capital gains taxes. The revenue loss from such a move would be small given that capital gains taxes accounted for less than one percent (0.8%) of total federal and provincial government revenue in 2005/06. If lost revenues must be replaced, other, less costly, forms of taxation should be used.

Eliminating capital gains taxes would substantially increase prosperity in Canada. In the words of former Federal Reserve Chairman Alan Greenspan, “[t]he major impact [of the capital gains tax] is to impede entrepreneurial activity and capital formation. While all taxes impede economic growth to one extent or another, the capital gains tax is at the far end of the scale. I argued that the appropriate capital gains tax was zero.”

Introduction

Capital gains taxes, like all forms of taxation, raise revenues for the government but also impose economic costs. Unfortunately, the cost of taxation is not limited to the amount of tax collected. Capital gains taxes impose additional costs on the economy because individuals and businesses alter their behaviour in response to these taxes. [1] The purpose of this study is to examine the economic costs of capital gains taxes [2] and to provide recommendations that will maximize investment, work effort, risk-taking, and entrepreneurship in Canada.

Organization of the study

Section 1 defines capital gains taxes and provides information on the applicable rates of capital gains tax at the federal and provincial levels in Canada. It also provides a comparison of international rates for the capital gains tax.

Section 2 presents information about government revenues generated by capital gains taxes at both the federal and provincial levels of government in Canada.

Section 3 examines the economic impact of capital gains taxes on the reallocation of capital, the stock of capital, and the level of entrepreneurship. It also examines the compliance and administrative costs associated with capital gains taxes and concludes by showing how much more costly it is to raise revenue using capital-based taxes like capital gains taxes rather than other types of taxes.

Section 4 provides recommendations that will maximize investment, work effort, risk-taking, and entrepreneurship.

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- 1 All taxes on capital from individual dividend- and interest-income taxes to corporate capital taxes, sales taxes on business inputs, and corporate income taxes reduce the returns on investment. From an economic point of view, there are large efficiency gains to be achieved by moving away from taxes on capital towards taxes on consumption (see Clemens et al., 2007).
 - 2 It is important to note that there are considerations other than economic costs in determining tax policy. For instance, equity (often referred to as fairness) and simplicity are critical. However, this study focuses on the economic costs, which are all too often ignored.

1 Defining capital gains taxes

A capital gain (or loss) generally refers to the price of an asset when it is sold compared to its purchase price. A capital gain occurs if the value of the asset at the time of sale is greater than the original purchase price. [3] On the other hand, a capital loss occurs if the value of the asset at the time of sale is less than the original purchase price. [4]

Canada does not maintain a separate and distinct capital gains tax as capital gains are considered normal income and subject to income taxes. [5] Depending on who holds the asset (individual or business), capital gains are taxed at either personal or corporate income-tax rates. However, capital gains are provided a preferential tax rate through what is referred to as an inclusion rate, the portion of a capital gain that is subject to income tax. [6] The inclusion rate in Canada is currently 50%, which means that only half of capital gains are subject to income taxes. [7]

Because Canada has a progressive personal income-tax system (tax rates increase as income increases), the most important rate is the taxpayer's marginal tax rate—the rate that must be paid on the next dollar of income. [8] Table 1 shows for 2006 (1) federal and provincial top marginal rates for personal income tax and the thresholds at which they apply; (2) federal and provincial top marginal rates for capital gains tax; (3) in the last column, the combined federal-provincial top marginal rates for capital gains tax. Since 50% of capital gains are included as taxable income, the marginal tax rate for a capital gain is half the applicable income-tax rate.

While Canadians in all provinces face the same federal top personal tax rate on capital gains (14.5%), provincial rates vary greatly. Alberta had the lowest provincial top marginal capital-gains tax rate in Canada at 5.0% (2006). [9] Newfoundland and Labrador, on the other hand, had the highest top provincial marginal capital-gains tax rate at 9.8% (2006).

The level of income at which the top provincial income-tax rate applies also differs greatly among the provinces. For instance, Quebec had the lowest threshold at which the top rate applied (\$57,431) while New Brunswick (\$108,769) and Saskatchewan (\$107,368) had the highest thresholds.

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- 3 This is typically called a capital gain realization.
 - 4 In most countries, including Canada, taxpayers are able to offset capital gains with capital losses to reduce the capital gains tax paid. In Canada, taxpayers who have a capital loss in one year can use it to reduce any capital gains in the year, to a balance of zero. If capital losses are more than the taxpayer's capital gains, he has a net capital loss for the year. Taxpayers are able to apply their net capital losses to taxable capital gains of the three preceding years and to taxable capital gains of future years. For more information, see <http://www.cra-arc.gc.ca/E/pub/tg/t4037/t4037-06e.pdf>.
 - 5 There is debate in the literature about whether or not capital gains are normal income (see Bartlett, 2001).
 - 6 The inclusion rate also determines allowable capital losses. Taxpayers multiply their capital loss for the year by 0.5 to determine their allowable capital loss.
 - 7 See Lochan (2002) for an explanation of the rationale for the inclusion rate. The inclusion rate has changed over time (see Sandler, 2004 and Richardson and Moore, 1995).
 - 8 Grubel (2000) found that, in Canada, most capital gains are taxed at the top marginal personal income-tax rate.
 - 9 Alberta is the only province with a single personal income-tax rate, which applies to all levels of income.

Table 1: Top marginal rates and thresholds for personal income tax and top marginal rates for capital gains tax, 2006

	Personal income tax		Capital gains tax	
	Top marginal rate [a]	Threshold for top marginal rate	Top marginal rate	Combined federal-provincial top marginal rate [d]
Federal	29.0%	\$118,286	14.5%	—
British Columbia	14.7%	\$94,122	7.4%	21.9%
Alberta	10.0%	N/A [b]	5.0%	19.5%
Saskatchewan	15.0%	\$107,368	7.5%	22.0%
Manitoba	17.4%	\$65,001	8.7%	23.2%
Ontario	17.4%	\$69,518	8.7%	23.2%
Quebec [c]	19.2%	\$57,431	9.6%	24.1%
New Brunswick	17.8%	\$108,769	8.9%	23.4%
Nova Scotia	19.3%	\$93,001	9.6%	24.1%
Prince Edward Island	18.4%	\$61,510	9.2%	23.7%
Newfoundland & Labrador	19.6%	\$59,181	9.8%	24.3%

[a] Rates include all surtaxes.

[b] Alberta has a single 10% income tax for all personal income; therefore, the threshold for the top rate does not apply.

[c] Quebec's rates are adjusted for abatements.

[d] The combined federal-provincial rates apply at income above \$118,286 as this amount, the top federal threshold, is higher than all of the provincial thresholds.

Source: Canada Revenue Agency, 2006; calculations by authors

In other words, Quebec's relatively high top marginal tax rate on capital gains applies at nearly half the level of income as that in New Brunswick or Saskatchewan. Alberta is the only province that has a single personal income-tax rate, which applies to all levels of income.

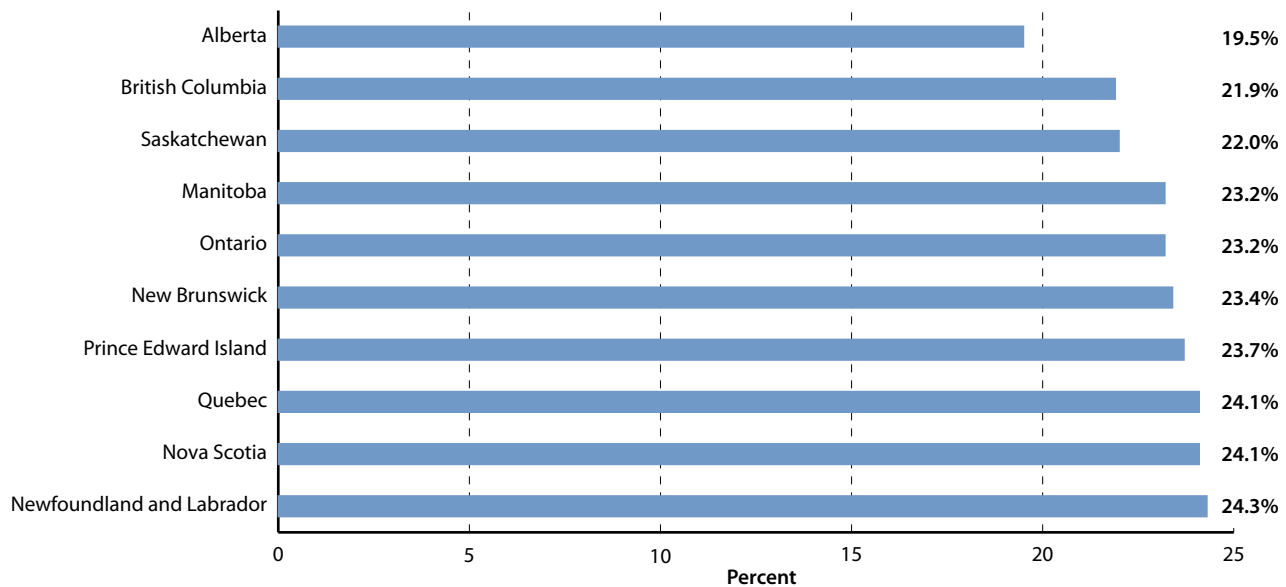
Figure 1 shows the combined federal-provincial top marginal personal capital-gains tax rates in Canada for each province in 2006. The three western provinces had the lowest combined (federal-provincial) top marginal capital-gains tax rates in 2006. Specifically, Alberta had the lowest federal-provincial top marginal capital-gains tax rate in Canada at 19.5% (2006), followed by British Columbia (21.9%) and Saskatchewan (22.0%). [10] Newfoundland and Labrador, on the other hand, had the highest combined (federal-provincial) top marginal capital-gains tax rate at 24.3%.

International capital gains taxes

The structure and rates of capital gains taxes vary considerably by country. Some countries have a separate and distinct tax on capital gains while others, like Canada, tax capital gains through their income-tax systems. In addition, both the rates of tax and levels of income at which those rates apply differ among countries.

10 The combined federal-provincial rates apply to income above \$118,286 (the top federal threshold) as the top federal threshold is higher than all of the top provincial thresholds.

Figure 1: Combined federal-provincial top marginal rates on the capital gains tax, 2006



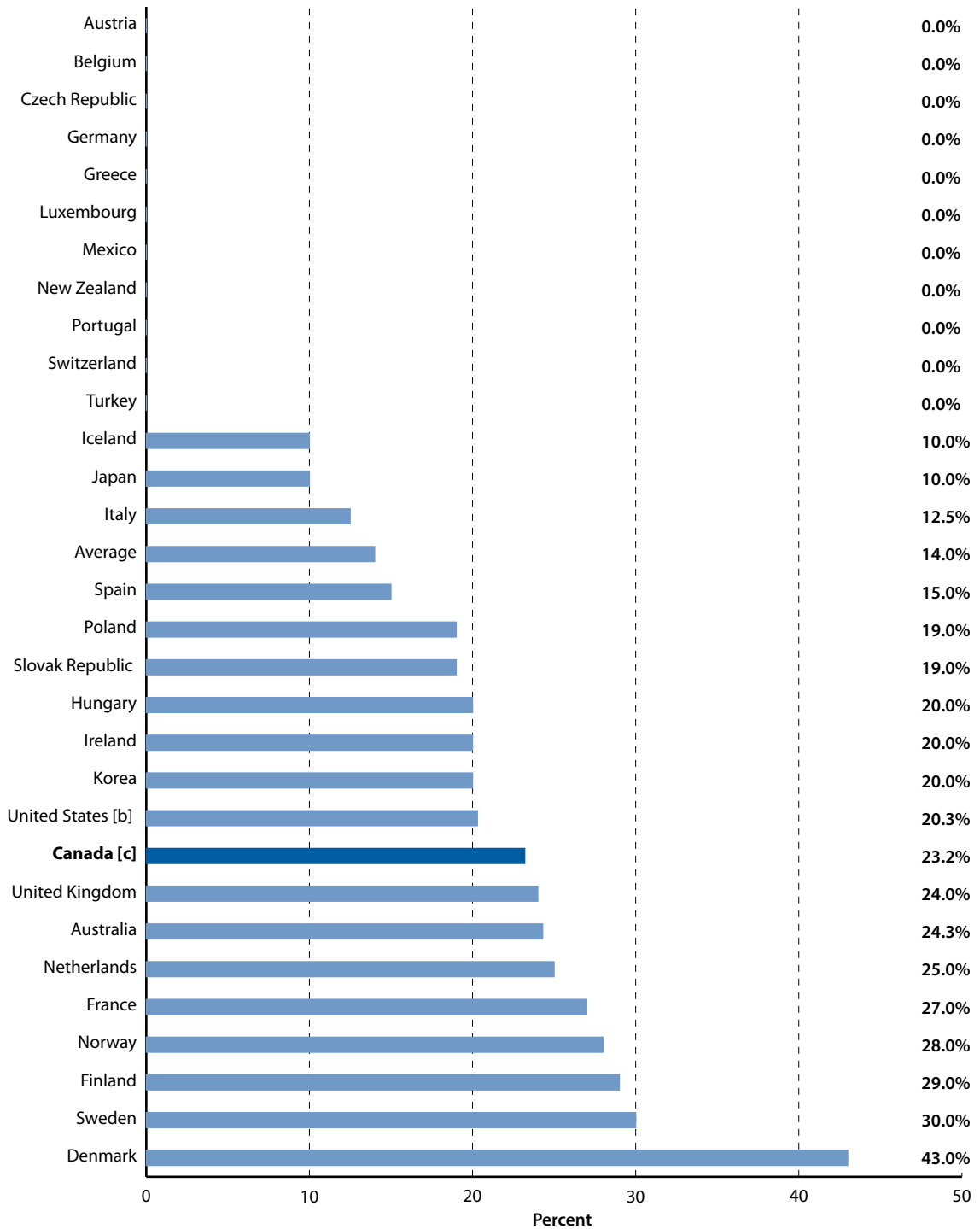
Source: Canada Revenue agency, 2006; calculations by authors.

Figure 2 shows the top personal capital-gains tax rates in 2005 for 30 countries belonging to the Organisation of Economic Co-operation and Development (OECD). [11] Eleven of these countries do not levy personal capital gains taxes. Canada has the ninth highest personal capital-gains tax rate among countries at 23.2%. [12] The United States ranks 21st with a capital gains tax rate of 20.3%. [13] Denmark has the highest capital-gains tax rate of 43.0%.

As in the discussion of Canadian provinces, it is important to note that capital-gains tax rates presented in figure 2 apply at different levels of income in different countries. That is, while the tax rates could be identical in two countries, the level of income at which those rates apply could be markedly different. Unfortunately, no international comparison of thresholds for capital gains taxes exists.

- 11 The rates presented are long-term rates of capital gains tax. Long-term rates of capital gains tax are rates that apply to assets held for at least ten years. It should be noted that some countries have different rates of capital gains tax depending on the length of time an asset is held (holding period). For example, in the United States, federal capital-gains tax on assets held less than one year are subject to the individual's top applicable tax rate. If the asset is held more than one year, then a federal tax rate of 15.0% applies (5.0% to those in the lowest two income-tax brackets). Similarly, Denmark and the United Kingdom have higher short-term rates of tax on capital gains (defined as assets held more than one year but less than two years in the study) of 62.9% and 40.0%, respectively. See Ernst & Young (2004) for a detailed delineation of international rates of personal capital-gains tax and the holding periods for which they apply.
- 12 This rate is based on the representative province of Ontario. The national average of the ten provincial top marginal rates of tax on capital gains for the 2005 tax year is 22.9%.
- 13 Includes federal, state, and city taxes. State and city taxes are based on rates in Michigan and Detroit. The US federal rate on capital gains is 15.0%.

Figure 2: Top marginal rates [a] on the capital gains tax for selected countries, 2005/06



[a] The rates presented are for individual taxpayers and are long-term rates of capital gains tax. Long-term rates of capital gains tax are rates that apply to assets held for at least ten years. Note that some countries have different rates of capital gains tax depending on the length of time an asset is held ("holding period").

[b] United States' capital-gains tax rate is based on the representative city and state of Detroit, Michigan.

[c] Canada's capital-gains tax rate is based on the representative province of Ontario.

Source: Government of Australia, 2006; calculations by authors.

Conclusion

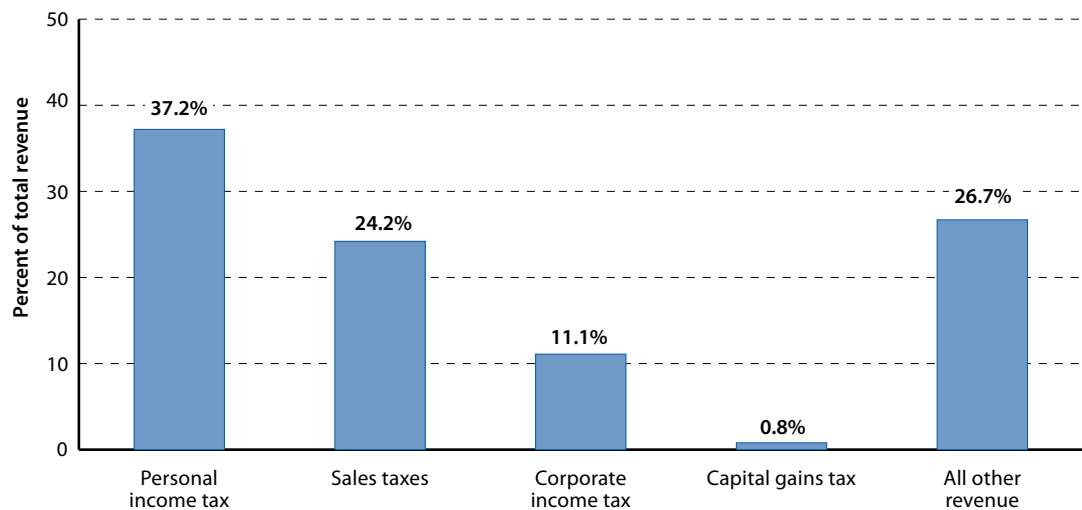
Capital gains and losses occur if the value of the asset at the time of sale differs from the original purchase price. In Canada, 50% of capital gains are subject to taxes. Capital gains taxes vary considerably among the provinces with the three western provinces having the lowest combined (federal-provincial) capital-gains tax rates while Quebec, Nova Scotia, and Newfoundland and Labrador have the highest rates. Canada has a relatively high capital-gains tax rate compared to other countries.

2 Government revenue from capital gains taxes

This section presents information on the amount of revenue raised through capital gains taxes by Canadian governments, both federal and provincial. Unfortunately, the amount of revenue raised through capital gains taxes is not provided to the public in government publications. Canadian governments lump capital-gains tax revenues within the larger personal and corporate income-tax categories in their budgets and annual reports. The information presented in this section is based on a special data request from the federal Department of Finance.

In 2005/06, Canadian governments raised approximately \$3.5 billion through capital gains taxes in total. The federal government raised \$2.2 billion while the provinces collected a combined \$1.3 billion. [14] Figure 3 shows the percentage of federal and provincial government revenue collected through various types of taxes. In 2005/06, total consolidated federal and provincial government revenue was \$443.1 billion of which 37.2% was collected through personal income taxes and 11.1% was collected through corporate income taxes. [15] In comparison, capital gains taxes accounted for less than one percent (0.8%) of total federal and provincial government revenue. In other words, revenues collected in the form of capital gains taxes are very small compared to the main sources of government revenue—personal and corporate income taxes and sales taxes.

Figure 3: Various taxes as a percentage of federal and provincial government revenues, 2005/06



Note: Personal and corporate income taxes are net of capital gains tax revenue.

Source: Statistics Canada, 2006 (Financial Management System); Canada, Department of Finance as a result of correspondence via e-mail between the Prime Minister's Office and N. Veldhuis (June 20, 2006); calculations by authors.

14 The provincial portion of capital-gains tax revenue was estimated by applying the ratio between federal capital-gains tax revenue and total federal income tax collected to provincial income-tax revenue.

15 Personal and corporate income taxes are adjusted for capital-gains tax revenue.

3 Economic costs of capital gains taxes

This section examines the economic impact of capital gains taxes on the reallocation of capital, the stock of capital, and the level of entrepreneurship. It also examines the compliance and administrative costs associated with capital gains taxes and concludes by showing how much more costly it is to raise revenue using capital-based taxes like capital gains taxes rather than other types of taxes.

1 The reallocation of capital and the “lock-in effect”

One of the most significant economic effects of capital gains taxes is the incentive it creates for owners of capital to hold on to their current investments, even if more profitable and productive investment opportunities are available. Economists refer to this result as the “lock-in” effect. Capital that is locked into current investments and not reallocated to more profitable opportunities reduces economic performance. Consider an investor who wishes to sell an asset and reinvest the proceeds in a new project. The amount of money received from the sale of the asset is reduced by the capital gains tax. In order for the investor to reallocate his capital, the new investment project must provide a rate of return high enough to recoup the funds paid in taxes plus yield a reasonable rate of return.

Suppose an investment currently worth \$1,500 yields an annual rate of return of 7.0% per year. Over five years, this investment will grow to \$2,103.83 if all income is reinvested and no taxes are paid on the income generated. Now suppose that, if the \$1,500 asset were sold today, the owner would receive a \$500 capital gain (the original cost of the investment was \$1000). If the owner resides in Ontario and is currently in the highest income-tax bracket, he would face a 23.2% capital-gains tax rate (see figure 1) resulting in \$116.00 in capital gains taxes. After the sale of the asset and payment of the tax, the investor has \$1,384.00 to place in a new investment. For an investment of \$1384.00 to grow to \$2103.83 (the amount received after five years from the original investment), a return close to 9.0% annually must be achieved. An investor with a time horizon of five years will hold on to the original investment (will lock in the investment) yielding 7.0% per year unless a new investment yields at least 9.0%. [16] In other words, in our example, an investment project yielding between slightly more than 7% and 9% is not funded.

While the magnitude of the lock-in effect depends on numerous factors (the rate of return on the original and new investments and investor’s time horizon), economic costs result

16 In 2002, Professors Sarath Abeysekera and Earl Rosenbloom of the University of Manitoba wrote an article in the *Canadian Tax Journal* titled “The Capital Gains Lock-in Effect: Deciding Whether to Hold or Switch.” The authors present formulas for determining the break-even rate of return for investments subject to capital gains taxation. This is the rate of return at which an investor is indifferent when deciding whether to hold a given investment asset or to switch to an alternative investment asset with capital gains taxation. Depending on a given rate of capital gains taxation, holding period, and expected capital growth rates, readers can use the tables provided and calculate their break-even rate of return. The tables illustrate the lock-in effect through the practical decisions investors must make in the presence of capital-gains taxation. The tables are available on line in an interactive version at <<http://www.umanitoba.ca/asper/faculty/sarath.abeysekera/research.htm>>.

because capital gains taxes prevent the reallocation of capital from lower to higher yielding uses. That is, capital gains taxes cause the economy to lose the extra output that the reallocation of capital would have produced. The lock-in of capital prevents the development of some new, potentially profitable, businesses that are engines of productivity, employment, and wealth creation.

Numerous academic studies have investigated the lock-in effect. [17] For example, an influential paper by Harvard Professor Martin Feldstein and his colleagues Joel Slemrod and Shlomo Yitzhaki (1980) was one of the first to provide an empirical analysis of the effect of taxation on the realization of capital gains (sale of corporate stocks at a profit). [18] The authors found that the realizing of capital gains is very sensitive to the marginal tax rate. They found a significant lock-in effect: a 10.0 percentage-point increase in the marginal tax rate reduced the probability of selling a stock by 6.5 percentage points. [19] [20]

Paul Bolster, Lawrence Lindsey, and Andrew Mitrusi (1989) evaluated the impact of the elimination in 1986 of the lower, long-term tax rate on capital gains on stock market activity in the United States. [21] The authors examined trading volume on the New York Stock Exchange (NYSE) and the American Stock and Options Exchange (AMEX) from 1976 to 1987. They found that trading volume significantly increased in the months leading up to the tax change and that trading volume significantly declined after the tax change: trading volume was 15.0% lower in the January of 1987 compared to previous Januaries. The empirical results suggest that the expected increase in the capital-gains tax rate induced investors to reallocate capital prior to the change.

A more recent study by Peter Kugler and Carlos Lenz (2001) examined the impact of the lock-in effect on the overall economy by studying the effect of capital gains taxes in different jurisdictions with very similar economic conditions and tax systems. The authors examined the

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- 17 Many studies provide empirical evidence of the existence of a lock-in effect. For instance, Jog (1995) finds evidence of a lock-in effect in Canada by examining the change in capital gains realizations after the 1985 introduction of a capital gains exemption. Also, see Landsman and Shackelford, 1995, Shackelford, 2000, Blouin et al., 2000, and Dai et al., 2006 for empirical evidence of the lock-in effect.
- 18 An earlier study by Martin Feldstein and Shlomo Yitzhaki (1978) examined the relationship between capital gains taxes and stock-market activity but did not extend the analysis to capital gains realizations.
- 19 In an earlier study, Yitzhaki (1979) estimates that high-income investors sacrifice an annual return of approximately 1.5% of the value of their stock as a result of the lock-in effect.
- 20 It is important to note the difference between a percentage-point change and a percent change. If, for example, the current capital gains tax rate were increased from 30% to 35%, the change could be interpreted as a 5 percentage-point increase or a 16.7% increase $[(35 - 30) / 30 \times 100]$.
- 21 An earlier study by Lindsey (1987) simulates the behavioural response of investors to the US Tax Reform Act of 1986 (which increased the average tax rate on capital gains from 15.0% to 27.0%). The author estimates that the first 6.0 percentage-point increase would reduce capital gains by 30.0% while the second 6.0 percentage-point increase would reduce capital gains by a total of 50.0%. Lindsey concludes that, at least in the short-term, this evidence supports the lock-in effect. A study by Donald Kiefer (1990) uses a computer simulation to test the impact on stock-market activity of the reintroduction of a lower, long-term rate of capital gains tax. Using the 1989 proposal to reduce tax on long-term capital gains from 28.0% to 15.0%, he estimates that the average holding period of investors would increase from 2.24 years to 2.81 years. This is consistent with other studies that conclude investors lock-in their capital to qualify for the lower, long-term rate of tax. In addition, the rate at which investors would sell and repurchase stocks year-over-year (the turnover rate) would increase from 19.7% to 22.9%. Put differently, reducing capital gains taxes encourages investors to unlock capital gains and increases the flow of capital.

experience of regional governments (“cantons”) in Switzerland that eliminated the capital gains tax. The authors’ statistical analysis showed that the elimination of capital gains taxes had a positive and economically significant effect on the long-term level of real income in 7 of the 8 cantons studied. Specifically, the increase in the long-term level of real income ranged between 1.1% and 3.0%; this means that the size of the economy was 1% to 3% larger due to the elimination of capital gains taxes.

While most research has examined the lock-in effect from the perspective of the investor, a recent paper by Chari et al. (2005) argued that the lock-in effect also existed for entrepreneurs and venture capitalists. They too, may hold on to their investments too long because of the inability to find investments that compensate them for taxes paid. That is, entrepreneurs stay in projects longer than expected or is optimal because shifting to new projects is too costly. The authors concluded that potentially more profitable projects go unfunded because entrepreneurs lock-in their capital in current projects.

Conclusion

Capital gains taxes significantly impede the reallocation of capital from older, less profitable, investments to those with higher rates of return. Numerous empirical studies have found that investors do indeed lock in their capital in the presence of capital gains taxes and that the lock-in effect damages an economy. Without the efficient flow of capital, the development of new, potentially profitable, businesses is limited. Given that these new ventures are the engines of productivity, employment, and wealth-creation, capital gains taxes reduce economic well-being.

2 The “user cost of capital” and the stock of capital

Capital gains taxes have a significant impact on the stock of capital. A reduced amount of capital, in turn, has a number of negative consequences including decreases in the productivity of Canadian workers and, ultimately, lower Canadian living standards. [22] The relationship between capital gains taxes and the stock of capital depends both on the impact of capital gains taxes on the cost of capital to users (i.e. businesses) and how sensitive these users are to changes in the cost of capital.

Capital gains taxes and the cost of capital

The “user cost of capital” is the cost to a business of raising one additional dollar for investment. The term was originally introduced by Harvard economist Dale Jorgenson (1963) to refer to the total economic cost of capital investment including the market price of raising an additional unit of capital, interest costs (if capital is purchased using debt), required rate of return to equity owners (if capital is purchase using retained earnings or money raised through share offerings), and the taxes that firms must pay on the profit that the capital investment generates.

22 See Veldhuis and Clemens, 2006 for a detailed discussion of the impact of capital accumulation on productivity and prosperity.

Investors have many investment opportunities in Canada and internationally. To attract investors, Canadian businesses must possess the highest risk-adjusted rate of return available to investors. Capital gains taxes increase the rate of return that businesses must generate for their investors because investors must pay tax on any gains in the value of their shares. [23] In other words, capital gains taxes require firms to provide higher pre-tax rates of return to their owners because the returns will be lowered when the capital gains tax is applied. Because, as noted above, the required rate of return that investors demand is part of the total economic cost of capital, capital gains taxes increase the “user cost of capital.”

Numerous empirical studies have examined the impact of capital gains taxes on firms’ user cost of capital. [24] For instance, McKenzie and Thompson (1995) estimate that a 10.0 percentage-point reduction in the rate of capital gains taxes in Canada decreases the cost of capital by 3.0% to 6.0%. [25] Allen Sinai (1997) estimated the impact upon the American economy of halving the capital gains tax for individuals (50% capital gains exclusion) and reducing the rate to businesses from 35.0% to 25.0%. He found that the capital-gains tax reduction would reduce the cost of capital to businesses, on average, by 2.7% per year from 1997 to 2002. Similarly, a study by DRI/McGraw-Hill (1997) estimates that the same capital-gains tax reduction would lower the net cost of capital (total, 1998 to 2007) by 3.0%.

Cost of capital and the stock of capital

The degree to which capital gains taxes lower the stock of capital depends critically on how sensitive businesses are to the cost of capital. That is, to what extent do firms change their capital investment when their cost of capital changes. Robert Chirinko and Andrew Meyer (1997) quantify the sensitivity of investment spending to the user cost of capital and estimate that a 1% increase in the user cost of capital resulting from an increase in business taxes would decrease capital investment by 0.05 to 1.7%. [26] Milligan et al. (1999) estimate the sensitivity of investment to changes in the user cost of capital in Canada. They estimate that a general decrease in the user cost of capital of about 1.2% is associated with a 1.0% increase in investment and that a 4.0 percentage-point reduction in capital gains taxes leads to a 1.0% to 2.0% increase in investment.

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- 23 It is important to note that Canada’s tax system contains numerous measures to exclude some capital gains from immediate taxation. For example, capital gains realized in RRSPs and other registered plans are not immediately taxed.
- 24 Milligan, Mintz, and Wilson (1999) claim that the response of share prices to changes in capital gain taxes provides “direct evidence” that these changes have an impact upon firms’ user cost of capital. That is, changes in capital gains taxes change the rate of return required by investors and thus have an impact upon the price that investors are willing to pay for shares of the company. Numerous empirical studies have examined the impact of capital gains taxes on share prices: see Amoako-Adu et al., 1992; McKenzie and Thompson, 1995; Guenther and Willenborg, 1999; Shackelford, 2000; and Blouin et al., 1999, 2003.
- 25 It is important to note the difference between a percentage-point change and a percent change. If, for example, the current capital-gains tax rate were increased from 30% to 35%, the change could be interpreted as a 5 percentage-point increase or a 16.7% increase $[(35 - 30) / 30 \times 100]$.
- 26 A more recent paper by Robert Chirinko and colleagues (1999) investigates the responsiveness of business capital formation to its user cost. The authors find that higher user costs do indeed reduce capital formation. Specifically, they estimate a user cost elasticity of approximately -0.25 , meaning that a 1% increase in the user cost of capital would decrease capital formation by 0.25%. In addition, they conclude that reducing the capital-gains tax rate would have a positive impact upon the long-run capital stock.

Conclusion

Capital gains taxes lower the stock of capital in Canada. By increasing the cost of capital to Canadian businesses, capital gains taxes make capital investments more expensive and reduces the amount of investment that takes place. A smaller amount of capital decreases the productivity of Canadian workers and ultimately lowers Canadian living standards.

3 Entrepreneurship and risk-taking

Entrepreneurs and their financiers [27] are critical to a successful economy in that they challenge the status quo, advance technology, develop new products and services, create jobs, and increase wealth. Unfortunately, capital gains taxes have a negative impact on the level and financing of entrepreneurship.

Entrepreneurs risk their own capital and time in hopes of profiting from an unproven product, service, or technology. In addition, many entrepreneurs develop their innovations with the help of venture capitalists who provide financing, industry knowledge and managerial know-how. Typically, entrepreneurs and their financiers accept low, if any, current compensation in the hope of substantial future returns. That is, they agree to a low payout early in the venture in order to increase the value of their company through the reinvestment of earnings. Both entrepreneurs and financiers expect to be compensated when the business matures and generates significant returns, is taken public and listed on the stock market, or is bought out by another company.

Capital gains taxes reduce the return that entrepreneurs and investors receive from the sale of the business, the return for risk-taking, innovation, hard work, and low current compensation. The number of such risk takers and financiers, and the amount of money they are willing to invest, decreases when the potential returns decrease. The result is a lower level of economic growth, lower level of job creation, and ultimately a less prosperous economy.

Capital gains taxes also have an impact upon the ability of entrepreneurs to attract key managers from the traditional business sector. Since start-ups cannot usually offer wages that are competitive with those in the traditional business sector, managers are recruited to start-ups through ownership stakes in the business. Capital gains taxes reduce the return these managers receive, which reduces the likelihood that start-ups will be able to attract the necessary talent growth requires.

There is a growing body of academic research investigating the impact of capital gains taxes on entrepreneurship. Most studies focus on how a lower rate of return resulting from capital gains taxes affects the actors in the entrepreneurial process—the entrepreneurs and their financiers. In addition, some recent studies examine the impact of capital gains taxes on what is perhaps entrepreneurs' most significant contribution to economic growth, innovation and the creation of ideas.

27 I.e. "venture capitalists." Venture capital is money invested in new ("start-up"), and potentially high-growth, small businesses. Venture capital derives from several sources: (1) formal venture capital, which consists primarily of venture capital funds where industry experts manage a portfolio of venture investments; (2) informal sources, such as "love" capital from friends and family, and; (3) wealthy individuals with business experience ("Angels"), who provide capital and business expertise to new firms.

Professor James Poterba (1989) provided the theoretical groundwork for examining the impact of capital-gains tax policy on entrepreneurship. Poterba highlighted an important link between capital gains taxes and the demand for venture capital funding: potential entrepreneurs compared the compensation obtained from employment at an established firm with the expected payoff from a start-up where a larger share of their compensation would consist of a capital gain. Poterba concluded that by changing the relative tax burdens, a reduction in capital gains taxes attracts more managers of higher quality who become entrepreneurs and demand venture capital.

Harvard economists Paul Gompers and Josh Lerner (1998) made an empirical examination of Poterba's argument by exploring the key drivers of venture capital funding. Analyzing the stock of venture capital and tax rates on capital gains from 1972 to 1994, Gompers and Lerner found that a one percentage-point increase in the rate of capital gains tax was associated with a 3.8% reduction in venture capital funding. [28]

More recently, Christian Keuschnigg and Soren Bo Nielsen (2004a), writing in the *Journal of Public Economics*, investigated the impact taxes and other public policies (i.e. subsidies to support new firms) had on the creation and success of businesses that were financed by venture capital. In their analysis, the authors included the managerial effort and advice that venture capitalists provided to entrepreneurs in addition to financing. Keuschnigg and Nielsen found that "even a small capital gains tax ... diminishes incentives to provide entrepreneurial effort" (2004a: 1033).

More recently, Donald Bruce and Mohammed Mohsin (2006) presented an empirical analysis of tax policy and entrepreneurship in the United States. The authors examined personal income-tax rates, capital gains taxes, and corporate income-tax rates on self-employment rates (a proxy for entrepreneurship). [29] Bruce and Mohsin found that a one percentage-point reduction in the capital-gains tax rate is associated with a 0.11 to 0.15 percentage-point increase in self-employment rates.

Da Rin et al. (2006) examined the impact a number of government policies had on new ventures (start-up businesses) in 14 European countries from 1988 to 2001. The authors used two measures to determine whether policies were successful: the proportion of high-technology investments to total venture investments (high-tech ratio) and the proportion of early-stage investments to total venture investments (early-stage ratio). The authors found that three policies worked well to increase the proportion of high-tech and early-stage ventures: (1) opening a new venture stock market, (2) reducing the capital gains tax and, (3) reducing labour regulation.

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- 28 Daniel Sandler (2004) found that much of the research stemming from Poterba (1989) did not include the informal venture-capital market. He explained that Poterba (1989) ignored the 38.0% of firms launched without outside investors and financed by "love capital" (funding from friends and family) or debt financing. While there is currently little empirical research on how much individuals across Canada are contributing informally to entrepreneurship, estimates of the impact of capital gains tax on entrepreneurs and their demand for venture capital is likely understated.
- 29 The authors use four different measures of entrepreneurship: (1) the number of individual income-tax returns with income from a small business/profession or farm, as a share of all individual income-tax returns (from Internal Revenue Service); (2) same as (1) but adding income-tax returns from partnerships and small business corporations (from IRS); (3) the number of all non-agricultural workers aged 16 and older who are self-employed (from the Bureau of Labor Statistics); and (4) same as (3) but including the agricultural sector (from BLS).

Conclusion

Capital gains taxes have a detrimental impact on the number of entrepreneurs and risk-takers. Entrepreneurs and their financiers are critical to a successful economy because they challenge the status quo, advance technology, develop new products and services, create jobs, and increase wealth. These individuals trade off low current compensation because they expect to generate significant future returns. Capital gains taxes reduce the return that entrepreneurs, venture capitalists, and other investors receive from risk-taking, innovation, and work. Lower expected returns decreases the number of entrepreneurs and risk-takers and ultimately reduces investment, technological advances, employment, and overall economic growth.

4 Other costs associated with capital gains taxes

The economic costs outlined in the previous three sub-sections result because capital gains taxes change the incentives for productive behaviour. In addition to these costs, capital gains taxes also impose compliance and administrative costs. Compliance costs are incurred when individuals and firms consume resources to comply with tax regulations. Administrative costs are those expenses incurred by government—ultimately paid for by citizens—to manage and maintain the tax collection system. Finally, there are also costs associated with the evasion of capital gains taxes in that resources spent of evading the tax can be put to more productive uses. The compliance and administrative costs and evasion of capital gains are discussed in more detail in this section.

Compliance costs

Tax compliance costs are incurred when fulfilling the recording and filing requirements associated with paying a tax. These costs include such expenses as bookkeeping, reporting, calculating, and remitting tax payments. Unfortunately, there are no Canadian studies that measure the compliance costs associated with capital gains taxes, presumably because capital gains are taxed as normal income in Canada. However, there are a few studies covering other countries that are relevant to our analysis of compliance costs in Canada.

Blumenthal and Slemrod (1992) found that American taxpayers who received capital gains income incurred higher compliance costs than those who did not. From a survey of 2,000 Minnesota households, the authors found that having capital gains increased the time individuals spent on paying taxes by 7.9 hours, increased the money they spent on professional tax assistance by about \$21, and increased the total cost of compliance by \$143 per taxpayer (all figures in 1989 US dollars). Tran-Nam et al. (2000) found that capital gains taxes imposed significant compliance costs on Australian firms: 6.8% of total income tax revenue collected (including income tax revenue generated from capital gains).

Vaillancourt (1989) examined compliance and administrative costs for personal income taxes in Canada. Since capital gains are taxed through the income-tax system in Canada, this study provides some useful insights into the compliance costs for capital gains taxes. Vaillancourt found that compliance and administrative costs for personal income taxes (the two costs

were not delineated) were some 6.9% of taxes collected, which he deemed to be in line with international studies (1989: 83). [30]

While very few studies measure compliance costs associated with capital gains taxes, the studies reviewed above clearly indicate that there are positive compliance costs incurred by individuals, families, and businesses in addition to the direct costs of taxation. These costs must be taken into consideration when assessing tax policy.

Administrative expenses

In addition to compliance costs individuals, families, and businesses pay when complying with capital-gains tax regulations, there are also costs associated with collecting, administering, and managing the collection of capital gains taxes. These costs are directly incurred by governments that collect taxes but are ultimately borne by citizens. As was the case for compliance costs, evidence for administrative costs is generally limited and unfortunately no studies specifically analyze the costs associated with capital gains taxes.

Vaillancourt (1989) examines the administrative costs associated with personal income taxes and two payroll taxes (CPP/QPP and UI). The costs include processing costs, administration and accommodation costs, capital expenses, and litigation costs. Vaillancourt concluded that the total administrative cost to the federal government for these three taxes in 1986/87 was \$642 million. These costs represented roughly 1.0% of the gross revenues collected by these three tax sources. [31]

The administrative costs associated with capital gains must also be taken into consideration when considering the total costs of taxes. While no direct estimates for these costs exist for capital gains taxes, the numerous regulations in Canada's tax code to determine the valuation and timing of capital gains indicate that administrative costs surely exist as Canada Revenue Agency uses many agents, auditors, and lawyers to monitor and enforce these regulations.

Tax evasion

Capital gains taxes have also led some taxpayers to evade the payment of the tax. The level of tax evasion is the extent to which actual tax revenue collected by government differs from that which would have been collected if every taxpayer paid exactly what is required by law. Tax evasion has important implications for the efficiency of taxes, since resources spent on evading the tax could be put to more productive uses.

Professor James Poterba's study in the *American Economic Review* (1987b) was a path-breaking work in measuring the relationship between capital gains taxes and tax evasion (see also Poterba, 1987a). He found that capital gains taxes have a significant impact on tax evasion:

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- 30 Maja Klun (2004) provides a review of the empirical literature of compliance costs associated with personal income tax in Canada. In addition, Professor Brian Erard's report (1997b) for the Technical Committee on Business Taxation concluded that the compliance burden for income and capital taxes for large companies in Canada equalled roughly 5% of taxes paid.
- 31 Vaillancourt (1989) did not calculate administrative costs as a percentage of gross revenues. This calculation was completed by the authors of this study. Revenues from personal income taxes, CPP/QPP (Canada Pension Plan and Quebec Pension Plan), and UI (Unemployment Insurance, now 'EI' or Employment Insurance) are from the National Economic Accounts. Administrative costs are divided by revenues from these three sources to obtain the 1.0% figure.

a 1.0% decrease in the capital gains tax rate increases the reported tax base by 0.4%. [32] In addition, he estimates that for a taxpayer with an income of \$100,000 and capital gains of \$20,000, a reduction in the taxpayer's tax rate from 45.0% to 33.0% (e.g. the United States' Tax Reform Act of 1986) would reduce the probability of the tax evasion from 72.0% to 55.0%.

A more recent study by Wayne Landsman, Douglas Shackelford, and Robert Yetman (2002) buttress this conclusion with evidence from a unique data set of shareholder information from the 1989 leveraged buyout of RJR Nabisco. They estimate that a one percentage-point increase in the marginal tax rate on capital gains is associated with a 0.42% increase in evasion. In addition, the authors find that the average level of evasion was 11.0% of the total capital gains.

Unfortunately, there are no specific estimates of to what degree taxpayers evade capital gains taxes in Canada. Studies covering the United States, however, show that there is indeed some degree of evasion associated with capital gains taxes.

Conclusion

In addition to the damaging economic costs of capital gains taxes resulting from changes in the incentives faces by individuals and businesses, capital gains taxes also impose compliance and administrative costs. Compliance costs are those expenses associated with complying with tax regulations and administrative costs are those expenses incurred by government—and ultimately paid for by citizens—to manage and maintain the tax collection system. Finally, there are also costs associated with the evasion of capital gains taxes in that resources spent of evading the tax can be put to more productive uses. While very few direct studies have been done, the estimates available clearly indicate that there are positive compliance and administrative costs and some degree of evasion associated with capital gains taxes.

5 Efficiency costs of capital gains taxes

All taxes impose efficiency (economic) costs on society because they distort the behaviour of individuals, families, and businesses. As discussed above, capital gains taxes reduce the after-tax rate of return on capital investments; they create an incentive for many investors to hold onto their investments even though more profitable opportunities exist; and they reduce the return that entrepreneurs, venture capitalists, and other investors receive from risk-taking, innovation, and work effort. Ultimately, the changes in incentives caused by capital gains taxes impede the turnover of older, less profitable, investments, reduce the supply of entrepreneurs and the investors that finance them, and reduce the overall level of accumulated capital.

Numerous studies, both academic and commissioned by government, have estimated the economic cost of different types of taxes. [33] The research relies on what is referred to as

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- 32 Poterba's work is unique because he focussed upon capital gains taxation alone. There has been much work done on income tax compliance and evasion in general: see Allingham and Sandmo, 1972 and Yitzhaki, 1974 for a theoretical review; see Feinstein, 1991 for an empirical analysis of income tax evasion.
- 33 A critical contribution to this field was by Nobel Laureate James Mirrlees who in the early 1970s developed the theory of optimal taxation. The core of Mirrlees' watershed work was that governments should achieve given revenue requirements by choosing taxes that have the best social welfare outcome (Mirrlees, 1971, 1972; Diamond and Mirrlees, 1971).

the “marginal efficiency cost” (MEC). The MEC methodology provides a mechanism by which to estimate the cost of different taxes by calculating the efficiency cost of raising one additional dollar of revenue. [34]

One of the most widely cited calculations of MECs are those by Dale Jorgensen and Kun-Young Yun (1991). The authors estimate the MECs of select US taxes and find that capital-based taxes (such as capital gains taxes) impose significant costs on the economy. They concluded that capital income taxes (dividend, interest, & capital gains) imposed a marginal cost of \$0.92 (MEC) for one additional dollar of revenue (table 2). In comparison, it costs the economy only \$0.26 to raise an additional dollar of revenue using consumption taxes.

The Canadian government’s Department of Finance recently published a study by Baylor and Beauséjour (2004) that calculated the long-term economic costs imposed by the main taxes used in Canada. [35] Baylor and Beauséjour estimated the benefits from a \$1 tax reduction for a number of different types of taxes and their results support Jorgensen and Yun’s earlier MEC estimates for the United States. [36] Baylor and Beauséjour’s results (table 3) show that there are significant benefits to society from decreasing capital-based taxes such as personal capital income taxes (dividends, capital gains, and interest income). [37] Specifically, a \$1 decrease in personal income taxes on capital increases society’s well-being by \$1.30. Comparatively, the smallest benefit (\$0.10) is generated from a reduction in consumption taxes. [38]

Conclusion

Estimates of the marginal efficiency cost (MEC) of both American and Canadian taxes indicate that taxes on personal capital income (dividends, capital gains, and interest income) impose substantial costs on the economy. Recent estimates from the federal Department of Finance show that a \$1 reduction in taxes on personal capital income (dividends, capital gains, and interest income) increases society’s well-being by \$1.30. In addition, these taxes were shown to be much more costly than other types of taxes such as consumption and payroll taxes.

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- 34 It is critical to note that the MEC of a tax is an estimate of the cost of raising one additional dollar of revenue. This means that the MEC is a measure of marginal or incremental cost and should be used to measure the benefits of small or incremental tax shifts. The MEC cannot be used to measure the total or even average cost of taxes.
- 35 Baylor and Beauséjour calculated the benefits from reducing taxes and assumed that the tax revenues lost due to the tax cuts were offset by a non-distortionary, lump-sum, tax increase. In other words, the tax changes were revenue neutral. In addition, lump-sum taxes are assumed not to distort the behaviour of individuals and firms because they do not alter relative prices. See Mankiw, 2005 for further details on lump-sum taxes.
- 36 Estimates of the MEC for Canadian taxes have been calculated by the federal Department of Finance and published by the Organisation for Economic Co-operation and Development (OECD, 1997) but unfortunately do not specifically estimate the MEC of individual capital income taxes. However, the study did find that capital-based taxes, because of their incentive effects, tend to impose much higher costs on society than other taxes such as consumption taxes. For example, corporate income taxes (MEC = \$1.55) and personal income taxes (MEC = \$0.56) impose much higher costs than other, more efficient, types of taxes such as the sales tax (MEC = \$0.17).
- 37 Ultimately, Canada should move towards an integrated flat-tax that excludes taxation on the return to savings (interest income, dividend income, & capital gains). See Emes et al., 2001 for a detailed analysis of a flat tax for Canada.
- 38 The Ministry of Finance in Quebec recently evaluated the benefits to Quebec’s economy from reducing different provincial taxes (Quebec, Ministry of Finance, 2005). The results of their analysis corroborate the findings of Baylor and Beauséjour.

Table 2: Estimates (\$CDN) of the marginal efficiency cost (MEC) for selected US taxes

Capital income taxes (individual and corporate)	\$0.92
Corporate income tax	\$0.84
Individual income tax	\$0.60
Payroll tax	\$0.48
Sales tax	\$0.26

Source: Jorgensen and Yun, 1991.

Table 3: Welfare gains from reductions in various taxes [a]

Capital Cost Allowance	\$1.40 [b]
Sales Tax on Capital Goods	\$1.30
Personal Capital Income Tax	\$1.30
Capital Tax	\$0.90
Corporate Income Tax	\$0.40
Average Personal Income Tax	\$0.30
Wage Tax	\$0.20
Consumption Tax	\$0.10

[a] Revenue loss is assumed to be recovered through “lump-sum” taxation. Welfare gains are calculated as the gain in economic well-being per dollar of tax reduction.

[b] The estimate for an increase in capital cost allowances (CCA) is for new capital only. Increasing CCA is not a tax reduction per se but rather an increase in a deduction against corporate income taxes.

Source: Baylor and Beauséjour, 2004.

4 Recommendation—eliminate capital gains taxes

Given the relative efficiency of other types of taxes, Canadian governments, both federal and provincial, should eliminate capital gains taxes. The revenue loss from such a move would be small given that capital gains taxes accounted for less than one percent (0.8%) of total federal and provincial government revenue in 2005/06.

If lost revenues must be replaced, other, less costly, forms of taxation should be used. In fact, the extent to which other taxes would have to be raised to replace the lost revenue from capital gains taxes would most likely be much smaller than the amount of revenue lost. That is, the elimination of the tax is expected to increase economic efficiency and lead to increased revenue collected from other taxes. A recent study by Harvard economists Gregory Mankiw and Matthew Weinzierl found that, “in almost all, cases tax cuts are partially self-financing. This is especially true for cuts in capital income taxes” (2006: 1431). Mankiw and Weinzierl suggest that approximately 50% of the loss of revenue from a reduction in capital income tax would be recovered through increased economic activity. While capital gains taxes are not specifically modeled, Mankiw and Weinzierl do provide some evidence that the elimination of the tax would be partially self-financing.

Would eliminating capital gains taxes lead to “income shifting”?

A common objection to the elimination of capital gains taxes is that an incentive would be created for taxpayers to shift taxable income into non-taxable capital gains, a practice often referred to as “income shifting” or “surplus stripping.” That is, if there were no capital gains taxes, business owners would attempt to reduce the amount their businesses distribute as dividends and instead reinvest money in the business. The owners could then undertake legal manoeuvres to “strip” the reinvested funds as tax-free capital gains. In addition, an incentive would also be created for professionals and others who operate through a wholly owned corporation to shift ordinary taxable income normally paid as salary into non-taxable capital gains. [39]

Grubel (2001) reviewed the international evidence on the effects of having no capital gains taxes and concludes that income shifting would be limited by two factors: (1) methods for income shifting are complicated and costly for small and wholly owned businesses; and (2) publicly traded companies face strict accounting rules and market discipline that make it difficult to engage in such activities. [40] Furthermore, several countries do not have capital gains taxes (figure 2). For example, Hong Kong, which has no capital gains taxes, introduced laws that prohibit tax avoidance through surplus stripping and established a Board of Review to hear appeals

39 See pages 16–19 in Grubel, 2001 for two theoretical examples of “surplus stripping.”

40 Numerous participants at a 1999 Fraser Institute symposium on capital gains taxes had worked in the financial sector during the 1960s when Canada had no capital gains taxes and indicated that surplus stripping was not a major problem at that time (Grubel, 2003).

of disputes with the tax authorities (Hsu and Yuen, 2001). While Canada and Hong Kong's tax systems differ greatly, Hong Kong's experience provides Canada with an example of anti-avoidance measures that could be put into place.

The appropriate capital gains tax is zero

A wide body of academic research has revealed the damaging economic costs of capital gains taxes. Canadians would be made much better off without this tax. Eliminating capital gains taxes would substantially increase prosperity in Canada. In the words of former Federal Reserve Chairman Alan Greenspan, "[t]he major impact [of the capital gains tax] is to impede entrepreneurial activity and capital formation. While all taxes impede economic growth to one extent or another, the capital gains tax is at the far end of the scale. I argued that the appropriate capital gains tax was zero" (Greenspan, 1997).

Conclusion

Capital gains taxes, like all forms of taxation, raise revenues for the government but also impose economic costs. Unfortunately, the cost of capital gains taxes is not limited to the amount of tax collected. Capital gains taxes impose additional costs on the economy because they reduce returns on investment and, thereby, cause individuals and businesses to alter their behaviour. As a result, capital gains taxes have a substantial impact on the reallocation of capital, the stock of capital, and the level of entrepreneurship in Canada.

Reallocation of capital

Capital gains taxes significantly impede the reallocation of capital from older, less profitable, investments to those with higher rates of return. Numerous academic studies have found that investors do indeed lock in their capital in the presence of capital gains taxes and that the “lock-in effect” significantly impedes economic growth. Without the efficient flow of capital, the development of new, potentially profitable, businesses is limited. Given that these new ventures are the engines of productivity, employment, and wealth-creation, capital gains taxes reduce the economic well-being of all Canadians.

Stock of capital

Capital gains taxes have a significant impact on the stock of capital in Canada by increasing the cost of capital to Canadian businesses. Capital gains taxes make capital investments more expensive and thus less investment takes place. A reduced amount of capital has a number of negative consequences including decreases in the productivity of Canadian workers and, ultimately, lower Canadian living standards.

Entrepreneurship and risk-taking

Capital gains taxes have a detrimental impact on the number of entrepreneurs and risk-takers in Canada. Entrepreneurs and their financiers are critical to a successful economy in that they challenge the status quo, advance technology, develop new products and services, create jobs, and increase wealth. These individuals trade-off low current compensation because they expect to generate significant future returns. Capital gains taxes reduce the return that entrepreneurs, venture capitalists, and other investors receive from risk-taking, innovation, and work effort. Lower expected returns decreases the number of entrepreneurs and risk-takers and ultimately reduces investment, technological advances, employment, and overall economic growth.

Compliance costs, administrative costs and tax evasion

In addition to the damaging economic costs of capital gains taxes resulting from changes in the incentives faced by individuals and businesses, capital gains taxes also impose compliance and administrative costs. Compliance costs are incurred by individuals and businesses when they fulfill the recording and filing requirements associated with paying a tax. Administrative costs are expenses incurred by government—and ultimately paid for by citizens—to manage and maintain the tax-collection system. Finally, there are also costs arising from the evasion of capital gains taxes: the resources spent in evading the tax could be put to more productive uses.

Marginal efficiency cost (MEC) of capital gains taxes

Estimates of the marginal efficiency cost (MEC) of both American and Canadian taxes indicate that personal capital income taxes (dividends, capital gains, and interest income) impose substantial costs on the economy. Recent estimates from the federal Department of Finance show that a \$1 reduction in personal capital income taxes (dividends, capital gains, and interest income) increases society's well-being by \$1.30. In addition, these taxes were shown to be much more costly than other types of taxes such as consumption and payroll taxes. As a result, there are economic gains available to Canadians from shifting away from personal capital income taxes.

Recommendation—eliminate capital gains taxes

Given the relative efficiency of other types of taxes, Canadian governments, both federal and provincial, should eliminate capital gains taxes. The revenue loss from such a move would be small given that capital gains taxes accounted for less than one percent (0.8%) of total federal and provincial government revenue in 2005/06. If lost revenues must be replaced, other, less costly, forms of taxation should be used.

Eliminating capital gains taxes would substantially increase prosperity in Canada. In the words of former Federal Reserve Chairman Alan Greenspan, “[t]he major impact [of the capital gains tax] is to impede entrepreneurial activity and capital formation. While all taxes impede economic growth to one extent or another, the capital gains tax is at the far end of the scale. I argued that the appropriate capital gains tax was zero.”

References

- Abeysekera, Sarath, and Earl Rosenbloom (2002). The Capital Gains Lock-in Effect: Deciding to Hold or Switch. *Canadian Tax Journal* 50, 5: 1623–38.
- Amoako-Adu, Ben, M. Rashid, and M. Stebbins (1992). Capital Gains Tax and Equity Values: Empirical Test of Stock Price Reaction to the Introduction and Reduction of Capital Gains Exemption. *Journal of Banking and Finance* 16: 275–87.
- Bartlett, Bruce (2001). *Why the Capital Gains Tax Rate Should be Zero*. NCPA Policy Report 245. National Center for Policy Analysis.
- Baylor, Maximilian, and Louis Beauséjour (2004). *Taxation and Economic Efficiency: Results from a Canadian CGE Model*. Department of Finance working paper. Government of Canada, Department of Finance.
- Berry Cullen, Julie, and Roger Gordon (2002). *Taxes and Entrepreneurial Activity: Theory and Evidence for the U.S.* NBER working paper 9015. National Bureau of Economic Research.
- Blouin, Jennifer, Jana Smith Raedy, and Douglas Shackelford (1999). *Stock Prices and Capital Gains Taxes: Evidence from the 1998 Reduction in the Long-Term Capital Gains Holding Period*. Working paper. University of North Carolina.
- Blouin, Jennifer, Jana Smith Raedy, and Douglas Shackelford (2000). *Capital Gains Holding Periods and Equity Trading: Evidence from the 1998 Act*. NBER working paper 7827. National Bureau of Economic Research.
- Blouin, Jennifer, Jana Smith Raedy, and Douglas Shackelford (2003). Capital Gains Taxes and Equity Trading: Empirical Evidence. *Journal of Accounting Research* 41, 4: 611–51.
- Blumenthal, M., and J. Slemrod (1992). The Compliance Cost of the US Individual Income Tax System: A Second Look After Tax Reform. *National Tax Journal* 45: 185–202.
- Bolster, Paul, Lawrence Lindsey, and Andrew Mitrusi (1989). Tax-Induced Trading: The Effect of the 1986 Tax Reform Act on Stock Market Activity. *Journal of Finance* 44, 2 (June): 327–44.
- Bruce, Donald, and Mohammed Mohsin (2006). Tax Policy and Entrepreneurship: New Times Series Evidence. *Small Business Economics* 26: 409–25.
- Burman, Leonard, and William Randolph (1994). Measuring Permanent Responses to Capital-Gains Tax Changes in Panel Data. *American Economic Review* 84, 4 (Sept.): 794–809.
- Chari, V.V., Mikhail Golosov, and Aleh Tsyvinski (2005). *Business Start-ups, The Lock-in Effect, and Capital Gains Taxation*. MIT Economics working paper. Massachusetts Institute of Technology.
- Chirinko, Robert, and Andrew Meyer (1997). The User Cost of Capital and Investment Spending: Implications for Canadian Firms. In P.J.N. Halpern, ed., *Financing Growth in Canada* (University of Calgary Press): 17–69.
- Chirinko, Robert, Steven Fazzari, and Andrew Meyer (1999). How Responsive is Business Capital Formation to Its User Cost? An Exploration with Micro Data. *Journal of Public Economics* 74: 53–80.
- Clemens, Jason, Niels Veldhuis, and Milagros Palacios (2007). *Tax Efficiency: Not All Taxes Are Created Equal*. Studies in Economic Prosperity 3. The Fraser Institute.
- Conerly, William (2001). *Capital Gains in Oregon: Economic Effects of a Tax Cut*. Conerly Consulting.
- Cummins, Jason, Kevin Hasset, and R. Glenn Hubbard (1996). Tax Reforms and Investments: A Cross-Country Comparison. *Journal of Public Economics* 62: 237–73.

- Da Rin, Marco, Giovanna Nicodano, and Alessandro Sembenelli (2006). Public Policy and the Creation of Active Venture Capital Markets. *Journal of Public Economics* 90: 1699–723.
- Dai, Zhonglan, Edward Maydew, Douglas Shackelford, and Harold Zhang (2006). *Capital Gains Taxes and Asset Prices: Capitalization or Lock-in?* NBER working paper 12342. National Bureau of Economic Research.
- Downer, Pauline (2001). International Appraisal of Effect of Capital Gains Tax on Investment in Small Business. *Journal of Financial Management and Analysis* 14, 2: 32–42.
- DRI/McGraw-Hill (1997). *The Capital Gains Tax, Its Investment Stimulus, and Revenue Feedbacks*. DRI, for the American Council for Capital Formation (April).
- Emes, Joel, Jason Clemens, Patrick Basham, and Dexter Samida (2001). *Flat Tax: Principles and Issues*. Critical Issues Bulletin. The Fraser Institute.
- Erard, Brian (1997a). *A Critical Review of the Empirical Research on Canadian Tax Compliance*. Working paper 97-6. Technical Committee on Business Taxation, Department of Finance.
- Erard, Brian (1997b). *The Income Tax Compliance Burden on Canadian Big Business*. Working paper 97-2. Technical Committee on Business Taxation, Department of Finance.
- Erard, Brian (1997c). *The Income Tax Compliance Burden on Small and Medium-sized Canadian Businesses*. Working paper 97-12. Technical Committee on Business Taxation, Department of Finance.
- Ernst & Young (2004). *The Global Executive*. Ernst & Young.
- Ernst & Young (2006). *The Worldwide Corporate Tax Guide*. Ernst & Young.
- Feinstein, Jonathan (1991). An Econometric Analysis of Income Tax Evasion and Its Detection. *RAND Journal of Economics* 22, 1: 14–35.
- Feldstein, Martin, and Shlomo Yitzhaki (1978). The Effects of the Capital Gains Tax on the Selling and Switching of Common Stock. *Journal of Public Economics* 9, 1: 17–36.
- Feldstein, Martin, and Joel Slemrod (1978). The Lock-In Effect of the Capital Gains Tax: Some Time Series Evidence. *Tax Notes* 7, 6 (August): 134–35.
- Feldstein, Martin, Joel Slemrod, and Shlomo Yitzhaki (1980). The Effects of Taxation on the Selling of Corporate Stock and the Realization of Capital Gains. *Quarterly Journal of Economics* 94, 4: 777–91.
- Gompers, Paul, and Josh Lerner (1998). What Drives Venture Capital Fundraising? *Brookings Papers on Economic Activity. Microeconomics* (vol. 1998): 149–92.
- Gravelle, J. (1994). *The Economic Effects of Taxing Capital Income*. MIT Press.
- Greenspan, Alan (1997). Testimony before the Senate Banking Committee (February 25).
- Grubel, Herbert G. (2000). *Unlocking Canadian Capital: The Case for Capital Gains Tax Reform*. The Fraser Institute.
- Grubel, Herbert G. (2001). *The Case for the Elimination of Capital Gains Taxes in Canada*. In Herbert G. Grubel, ed., *International Evidence on the Effects of Having No Capital Gains Taxes* (The Fraser Institute): 3–35.
- Grubel, Herbert G. (2003). Why There Should Be No Capital Gains Tax. In Herbert G. Grubel, ed., *Tax Reform in Canada: Our Path to Greater Prosperity* (The Fraser Institute): 139–61.
- Guenther, David. (1999). Investor Reaction to Anticipated 1997 Capital Gains Tax Rate Reduction. Working paper. Department of Accounting, University of Oregon.
- Guenther, David, and Michael Willenborg (1999). Capital Gains Tax Rates and the Cost of Capital for Small Business: Evidence from the IPO Market. *Journal of Financial Economics* 53: 385–408.
- Hsi, Berry F.C., and Chi-Wa Yuen (2001). Tax Avoidance Due to the Zero Capital Gains Tax: Some Indirect Evidence from Hong Kong. In Herbert G. Grubel, ed., *International Evidence on the Effects of Having No Capital Gains Taxes* (The Fraser Institute): 39–54.

- Jog, Vijay (1995). The Lifetime Capital Gains Exemption: Corporate Financing, Risk-Taking and Allocation Efficiency. *Canadian Public Policy* 21, Supplement: *The Canadian Experience of the Lifetime Capital Gains Exemption* (October): S116–S135.
- Jorgenson, Dale (1963). Capital Theory and Investment Behaviour. *American Economic Review* 53, 2 (May): 247–59.
- Jorgensen, Dale, and Kun-Young Yun (1991). The Excess Burden of Taxation in the United States. *Journal of Accounting and Finance* 6: 487–508.
- Keuschnigg, Christian, and Soren Bo Nielsen (2002). Tax Policy, Venture Capital, and Entrepreneurship. *Journal of Public Economics* 87: 175–203.
- Keuschnigg, Christian, and Soren Bo Nielsen (2004a). Taxation and Venture Capital Backed Entrepreneurship. *International Tax and Public Finance* 11: 369–90.
- Keuschnigg, Christian, and Soren Bo Nielsen (2004b). Start-ups, Venture Capitalists, and the Capital Gains Tax. *Journal of Public Economics* 88: 1011–42.
- Kiefer, Donald (1990). Lock-in Effect within a Simple Model of Corporate Stock Trading. *National Tax Journal* 43, 1: 75–94.
- Klun, Maja (2004). Compliance Costs for Personal Income Tax in a Transition Country: The Case of Slovenia. *Fiscal Studies* 25, 1: 93–104.
- KPMG LLP (2006a). *Canadian Corporate Income Tax Rates*. <<http://www.kpmg.ca/en/services/tax/taxrates.html>>.
- KPMG LLP (2006b). *Canadian Personal Income Tax Rates*. <<http://www.kpmg.ca/en/services/tax/taxratesPersonal.html>>.
- Kugler, Peter, and Carlos Lenz (2001). Capital Gains Taxation: Evidence from Switzerland. In Herbert G. Grubel, ed., *International Evidence on the Effects of Having No Capital Gains Taxes* (The Fraser Institute): 55–71.
- Landsman, Wayne, and Douglas Shackelford (1995). The Lock-in Effect of Capital Gains Taxes: Evidence from the RJR Nabisco Leveraged Buyout. *National Tax Journal* 48, 2: 245–59.
- Landsman, Wayne, Douglas Shackelford, and Robert Yetman (2002). The Determinants of Capital Gains Tax Compliance: Evidence From the RJR Nabisco Leveraged Buyout. *Journal of Public Economics* 84: 47–74.
- Lindsey, Lawrence (1986). *Capital Gains: Rates, Realizations, and Revenues*. NBER working paper 1983 (April). National Bureau of Economic Research.
- Lindsey, Lawrence (1987). Capital Gains Taxes under the Tax Reform Act of 1986: Revenue Estimates under Various Assumptions. *National Tax Journal* 40, 3: 489–504.
- Mankiw, N. Gregory, and Matthew Weinzierl (2006). Dynamic Scoring: A Back-of-the-Envelope Guide. *Journal of Public Economics* 90: 1415–33.
- McKenzie, Kenneth, and Aileen Thompson (1995). The Impact of the Capital Gains Exemption on Capital Markets. *Canadian Public Policy* 21, Supplement: 100–15.
- McKenzie, Kenneth, and Aileen Thompson (1997). *Taxes, the Cost of Capital, and Investment: A Comparison of Canada and the United States*. Working paper 97-3. Prepared for the Technical Committee on Business Taxation. Government of Canada, Department of Finance.
- Milligan, Kevin, Jack Mintz, and Thomas A. Wilson (1999). *Capital Gains Taxation: Recent Empirical Evidence*. Working paper. The Heward Stikeman Institute.
- Organisation for Economic Co-operation and Development (OECD) (1997). *OECD Economic Survey: Canada*. OECD.

- Organisation for Economic Co-operation and Development (OECD) (2006). *Economic Outlook*. OECD.
- Poterba, James (1987a). How Burdensome Are Capital Gains Taxes? Evidence from the United States. *Journal of Public Economics* 33, 2: 157–72.
- Poterba, James (1987b). Tax Evasion and Capital Gains Taxation. *American Economic Review* 77, 2: 234–39.
- Poterba, James (1989). Capital Gains Tax Policy toward Entrepreneurship. *National Tax Journal* 42: 375–89.
- Prowse, Stephen (1999). Equity Capital and Entrepreneurs. *Proceedings—Rural Conferences* (August): 11–26. Federal Reserve Bank of Kansas City.
- Reese, William (1998). Capital Gains Taxation and Stock Market Activity: Evidence from IPOs. *Journal of Finance* 53, 5 (October): 1799–819.
- Richardson, Stephen R., and Kathryn Moore (1995). Canadian Experience with the Taxation of Capital Gains. *Canadian Public Policy* 21, 77–99.
- Sandler, Daniel (2004). *Venture Capital and Tax Incentives: A Comparison Study of Canada and the United States*. Canadian Tax Paper 108. Canadian Tax Foundation.
- Shackelford, Douglas (2000). Stock Market Reaction to Capital Gains Tax Changes: Empirical Evidence from the 1997 and 1998 Tax Acts. *Tax Policy and the Economy* 14: 67–92.
- Sinai, Allen (1997). Testimony before the Senate Finance Committee, March 13, 1997. United States Senate, Senate Finance Committee.
- Sinai, T., and J. Gyourko (1999). The Asset Price Incidence of Capital Gains Taxes: Evidence from the Real Estate Industry and the Taxpayer Relief Act of 1997. Wharton Real Estate Center working paper 311. University of Pennsylvania.
- Spindler, Zane (2001). On the Social Costs of Capital Gains Tax: An Explanatory Note. *South Africa Journal of Economics* 69, 2: 359–63.
- Stiglitz, Joseph (1983). Some Aspects of the Taxation of Capital Gains. *Journal of Public Economics* 21: 257–94.
- Tran-Nam, Binh, Chris Evans, and Michael Walpole (2000). Tax Compliance Costs: Research Methodology and Empirical Evidence from Australia. *National Tax Journal* 53, 2: 229–52.
- Vaillancourt, Francois (1989). *The Administrative and Compliance Costs of the Personal Income Tax and Payroll Tax System in Canada*. Canadian Tax Paper 86. Canadian Tax Foundation.
- Veldhuis, Niels, and Jason Clemens (2006). *Productivity, Prosperity, and Business Taxes*. Studies in Economic Prosperity 3. The Fraser Institute.
- Yitzhaki, Shlomo (1974). A Note on Income Tax Evasion: A Theoretical Analysis. *Journal of Public Economics* 3, 201–02.
- Yitzhaki, Shlomo (1979). An Empirical Test of the Lock-in Effect of the Capital Gains Tax. *Review of Economics and Statistics* 61, 4: 626–29.
- Zodrow, George (1995). Economic Issues in the Taxation of Capital Gains. *Canadian Public Policy* 21, 27–57.

Government sources

- Alberta, Ministry of Finance (2006). *Budget 2006*. Government of Alberta.
- Australia, The Treasury (2006). *International Comparison of Australia's Taxes*. Commonwealth of Australia, The Treasury.
- British Columbia, Ministry of Finance (2006). *Budget and Fiscal Plan 2006/07*. Government of British Columbia.
- Canada, Department of Finance (2000a). *Budget 2000*. Government of Canada.
- Canada, Department of Finance (2000b). *Economic Statement and Budget Update*. Government of Canada.

- Canada, Department of Finance (2006). *Budget 2006*. Government of Canada.
- Canada Revenue Agency (2006). *What Are the Income Tax Rates in Canada for 2006?* Canada Revenue Agency. <<http://www.cra-arc.gc.ca/tax/individuals/faq/taxrates-e.html>>.
- Canada, Senate, Standing Committee on Banking, Trade, and Commerce (2000). *The Taxation of Capital Gains*. Parliament of Canada. <<http://www.parl.gc.ca/36/2/parlbus/commbus/senate/Com-e/bank-E/rep-e/reposmayoo-e.htm>>.
- Manitoba, Department of Finance (2006). *Budget 2006*. Government of Manitoba.
- New Brunswick, Department of Finance (2006). *Budget 2006*. Government of New Brunswick.
- Newfoundland and Labrador, Department of Finance (2006). *Budget 2006*. Government of Newfoundland and Labrador.
- Nova Scotia, Department of Finance (2006). *Budget 2006*. Government of Nova Scotia.
- Ontario, Ministry of Finance (2006). *Budget 2006*. Government of Ontario.
- Prince Edward Island, Department of Provincial Treasury (2006). *Budget 2006*. Government of Prince Edward Island.
- Quebec, Ministry of Finance (2005). *2005–2006 Budget Plan*. Government of Quebec.
- Saskatchewan, Department of Finance (2006). *2006-07 Saskatchewan Provincial Budget*. Government of Saskatchewan.
- Statistics Canada (2006). Financial Management System (FMS). Statistics Canada.
- United States Congress, Joint Economic Committee (1997). *The Economic Effects of Capital Gains Taxation*. Joint Economic Committee.
- United States, Department of the Treasury (2006). *Report of the Department of the Treasury on The Economic Effects of Cutting Dividend and Capital Gains Taxes in 2003*. United States Department of the Treasury.
- United States, Department of the Treasury, Internal Revenue Service (1996). *Federal Tax Compliance Research: Individual Income Tax Gap Estimates for 1985, 1988, and 1992*. Publication 1415. United States Department of the Treasury.

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