CHAPTER 5
Spurring Entrepreneurship through Capital Gains Tax Reform

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Introduction

Entrepreneurship is critical for economies to grow, become more productive, and create new jobs. But as has been discussed elsewhere in this book, demographics are changing in advanced industrial economies and this will likely lead to lower levels of entrepreneurship, while at the same time increasing the strain on social welfare programs and the political need for a strong economy to produce sufficient tax revenue to sustain them. This leads to the question of what can be done to stem the *likely* coming decline in entrepreneurship.

An area of policy reform that could contribute to higher levels of entrepreneurship is capital gains taxation reform. A wealth of research shows that capital gains tax reform can increase the incentives for individuals to engage in entrepreneurship, while also increasing the financing available

for entrepreneurial endeavors. Together, this would lead to higher levels of entrepreneurship and thus economic growth, increased productivity, and job creation.

Demographic changes are expected to reduce the relative level of entrepreneurship across advanced economies. This chapter responds to this situation by discussing how reforming capital gains taxes could partly counteract this phenomenon. The chapter proceeds as follows. The first section is an abbreviated reminder of the economics of growth and the impact of taxation. The second section broadly reviews the scholarly literature on the economic costs of capital gains taxes. The third section analyses the negative effects that capital gains have on entrepreneurship and the fourth reviews data on capital gains taxation in developed nations. The final section presents policy recommendations for how governments could reform capital gains taxes to spur entrepreneurship.

1. The economics of growth

A critical goal for policymakers is to create the conditions that enable rising levels of national income, i.e., economic growth. One of the more uncontroversial propositions in economics is that output is a function of labor (the workforce) and capital (machines, technology, land, etc.). Indeed, it is almost a tautology to say that growth exists when people provide more labor or more capital to the economy, or when—thanks to vital role of entrepreneurs—labor and capital are allocated more productively.

In other words, labor and capital are the two "factors of production," and the key for policymakers is to figure out the policy recipe that will increase the quantity and quality of those two resources.

Incentives play an important role. People want to consume, so that gives them a reason to earn income (for current consumption) and to save and invest (for future consumption). On the other hand, they prefer leisure over labor, and they also prefer immediate consumption over saving and investment.

In the absence of taxation, people provide labor to the economy so long as they value the income they earn more than they value the foregone leisure. And they provide capital to the economy (i.e., they save and invest) so long as they value future consumption (presumably augmented by earnings on capital) more than they value current consumption.

All of this is correct, but this discussion also helps illustrate why entrepreneurship is so important. The preceding analysis basically focused on achieving growth by increasing the *quantity* of capital and labor. Such growth is real, but it has significant "opportunity costs" in that people must forego leisure and/or current consumption in order to have more disposable income.

Entrepreneurs, by contrast, figure out how to increase the *quality* of capital and labor. More specifically, entrepreneurs earn profits by satisfying consumer desires with new and previously unknown or underused combinations of labor and capital. In their pursuit of profit, they come up with ways of generating more or better output from the same amount of labor and capital.

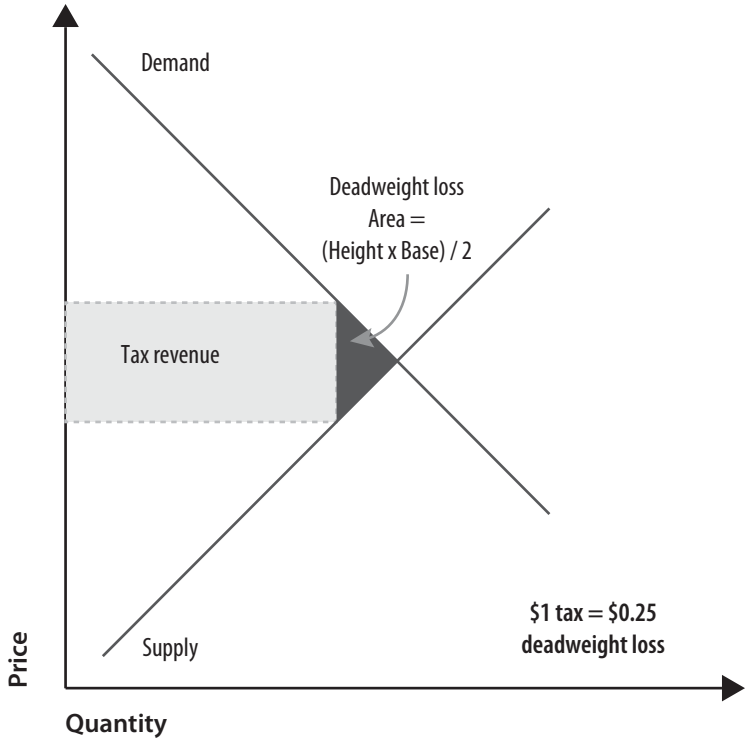
This explains why we have much higher living standards today even though we work far fewer hours than our ancestors. And with less punitive tax policy, we can ensure that out descendants will have even better lives in the future.

Tax rates

Taxation distorts normal incentives by driving a wedge between pre-tax income and post-tax consumption. In other words, people have less incentive to earn income when taxes lower their ability to enjoy the fruits of their labor. What matters in particular is the "marginal tax rate" on additional economic activity. In other words, what affects incentives is not someone's overall tax rate (the share of their total income that gets taken by government), but how much they will get to keep if they earn, say, an additional unit of income.

Moreover, the disincentive effect gets much larger as tax rates increase. Indeed, it gets disproportionately larger. Consider the conventional supply and demand graph showing how the imposition of a $1 tax leads to less

Figure 1: The Effect of the Imposition of a $1 Tax

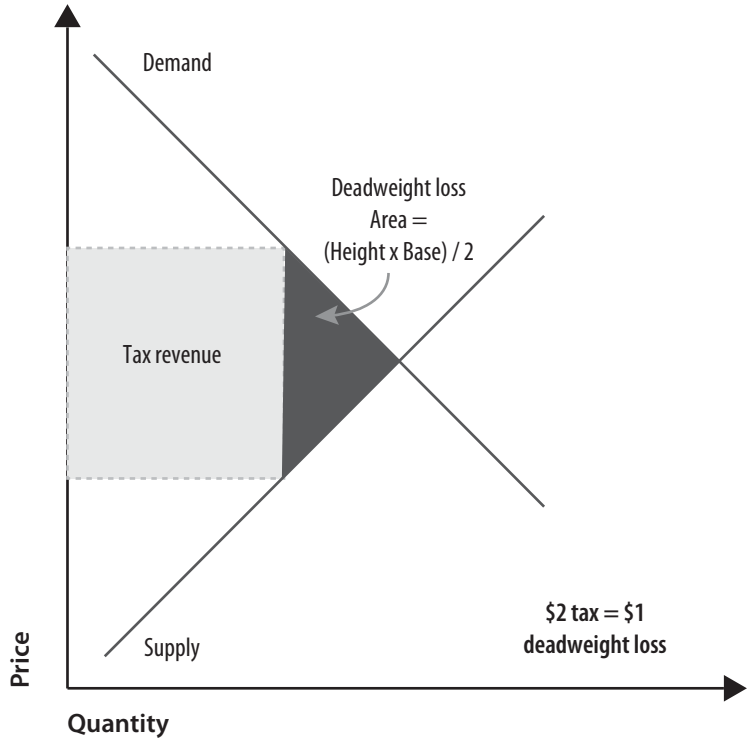


economic activity (the triangle that economists refer to as a "deadweight loss") (figure 1).

Now consider the same supply and demand graph with a $2 tax (figure 2). The tax has doubled, but the deadweight loss has more than doubled. And if the tax was increased to $3 and then $4, the same thing would happen. The economic cost (as represented by foregone economic output) gets much bigger with each incremental tax increase.

Figure 3 shows another way of illustrating the disproportionate damage imposed as tax rates increase. The deadweight loss is in the vertical axis, and it increases much faster than the tax burden, which is shown on the

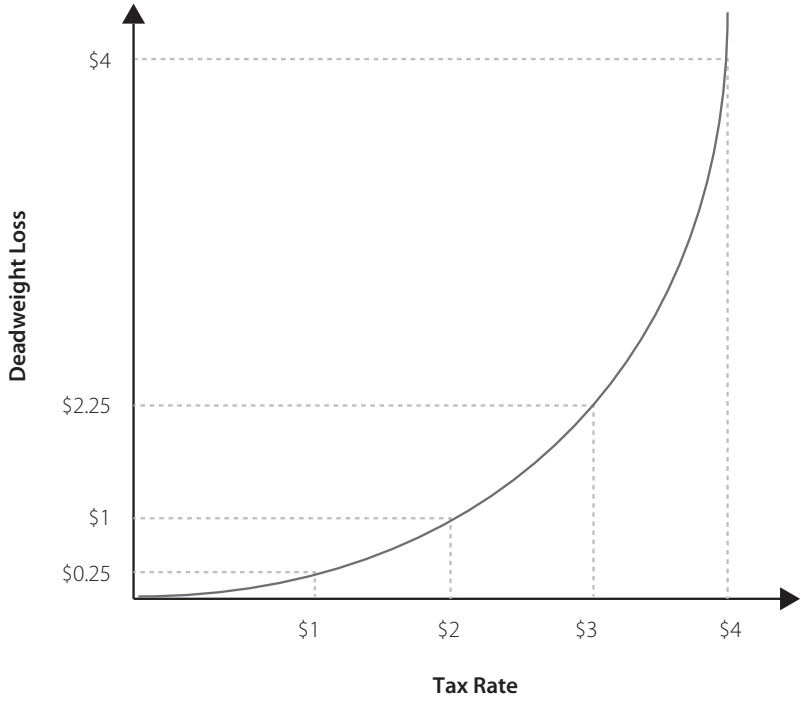
Figure 2: The Effect of the Imposition of a $2 Tax



horizontal axis. This is a very simple example, of course, which assumes supply and demand curves are straight lines. It's also possible, depending on what is being taxed, that the supply and demand curves could be steeper or flatter. Regardless of assumptions, though, the deadweight loss will always increase much faster than the tax.

So why would anyone want higher tax rates when the economic damage is disproportionately larger? The answer depends on the goal. Arthur Okun wrote a book for the Brookings Institution in 1975 that posited a trade-off between equality and efficiency (Okun, 1975). Some people don't like wide variations in income, so they favor high tax rates even though it

Figure 3: Deadweight Loss versus the Tax Rate



reduces overall economic performance (i.e., more deadweight loss). Others want more economic growth and don't think governments should worry if some people get richer faster than other people do.

Double taxation

Tax rates are a particularly important concern when considering taxes on capital. Most developed nations have tax systems that impose higher effective tax rates on income that is saved and invested than on income that is immediately consumed. More specifically, capital gains taxes and estate taxes, combined with a tendency of nations to tax business income at both the firm level and the shareholder level, produce tax systems that dispro-

portionately penalize capital. Such policies often are known as "double taxation" and are illustrated in figure 4 using the US tax code as an example.

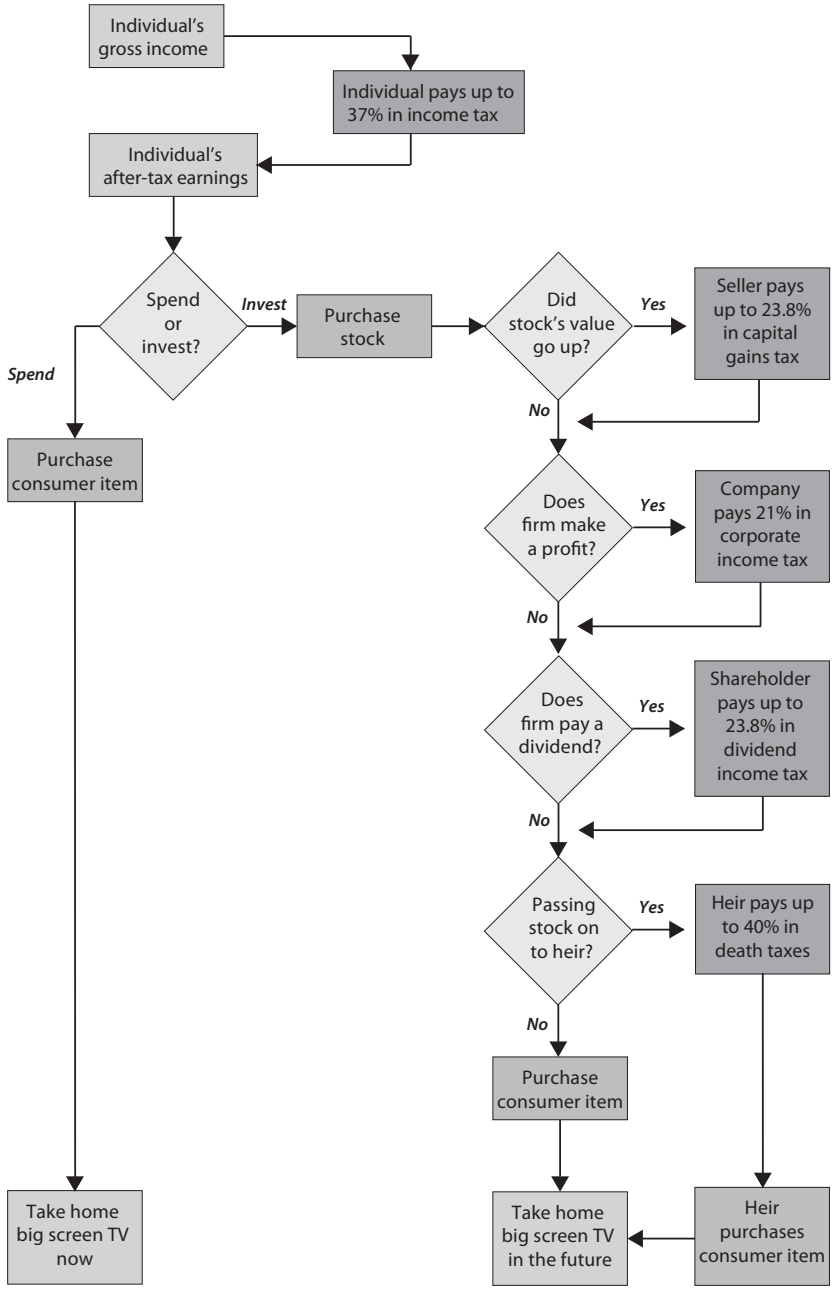
In other words, the effective marginal tax rate on saving and investment is considerably higher than the effective marginal tax rate on consumption. This double taxation is understandably controversial since all economic theories—even Marxism and socialism—agree that capital is critical for long-run growth and higher living standards.

So why do some policymakers enact and maintain tax policies that create a bias against saving and investment? The simple answer is that higher-income taxpayers are more likely to save and invest, and politicians impose harsh tax burdens on capital for reasons of "fairness." In other words, recalling Okun's equality-efficiency trade-off, they are willing to sacrifice growth to achieve redistributional goals.[1]

This analysis does not suggest that the ideal tax rate on labor or capital should be zero. From a broader public-finance perspective, taxes may finance "public goods" such as law enforcement and infrastructure that may improve people's ability to earn income. And policymakers may decide that slower growth is an acceptable price to pay to achieve a more equal distribution of income. Instead, this is simply to say that taxation imposes

1 There's a debate among public finance economists about the correct tax base. At the risk of oversimplifying, those one the left believe in the Haig-Simons approach, which embraces double taxation (and was the inspiration for Canada's Royal Commission on Taxation, aka, the Carter Commission). Supporters of this approach basically believe that changes in net worth should count as income, so this is used to justify the existence of capital gains taxes and other forms of taxation that discriminate against income that is saved and invested. The alternative theoretical construct is neutral taxation, generally supported by those on the right, which often is referred to as consumption-base taxation. The core principle of this theory is that the tax system should be neutral about how current consumption and future consumption are taxed. This is the approach that is incorporated in the Hall-Rabushka flat tax, although it's also possible to have a system of neutral taxation and graduated tax rates. Such a system is conceptually similar to a sales tax or value-added tax since the incidence is the same regardless of whether income is taxed as it is earned or taxed as it is spent.

Figure 4: Tax Bias against Saving and Investment in the United States



a cost and that policymakers should be cognizant that higher levels of tax are especially costly.

2. Economic consequences of capital gains taxation

In addition to the downsides shared with other forms of taxation, capital gains taxes harm economies in ways unique to the levy. This section will explain the theory of such taxes and review the literature on the economic costs of capital gains taxation. There is strong evidence for the view that the limited revenues collected from taxing capital gains come at significant cost to economic growth.

A capital gain occurs when a piece of property is sold for more than its original purchase price. The property can be physical property, such as a piece of land or a personal possession, or it can be an income-producing financial asset, such as a stock or bond.

Figure 4 from the previous section shows that taxing such gains is a form of double taxation, assuming the property is acquired with after-tax earnings. But is it justifiable double taxation? Let's consider the example of a capital gains tax on shares of stock.

Imagine an individual uses after-tax income to buy company stock. Further imagine that the stock rises in value because of changes that lead investors to believe that the company will enjoy higher future profits. If the individual sells the stock, a capital gains tax will be imposed. Yet the future income (the expectation of which caused the value of the stock to climb) will be taxed when it actually occurs. So, the same income effectively gets taxed twice (and maybe even three times in nations that tax business income at both the firm level and shareholder level).

Yet capital gains taxes are not just another form of double taxation. The levy is particularly troublesome for several reasons.

1. As previously mentioned, entrepreneurs play a vital role in the economy since they figure out more efficient ways to allocate labor and capital. Like the rest of us, they are motivated by a desire for

personal success rather than some amorphous wish to boost macroeconomic performance. The potential for a capital gain is a big reason for the risk they incur and the effort they expend. Thus, the existence of capital gains taxes discourages some entrepreneurial activity from ever happening.

2 Some entrepreneurial activity will still occur, of course, but another problem stems from the fact that the capital gains tax is more easily avoidable than other forms of taxation. Entrepreneurs who generate wealth with good ideas can avoid the levy by simply choosing not to sell. This "lock-in effect" is not good for the overall economy, but it's often the most rational choice for the individual. Some supporters of capital gains taxation admit this problem and claim it can be solved by taxing unrealized capital gains (i.e., impose a tax even if an asset is not sold). Yet this would result in substantial compliance burdens and no government has ever tried this approach.

3 Most governments do not allow taxpayers to adjust the value of property for inflation when calculating capital gains. Even in a low-inflation environment, this can produce perverse results. Imagine that there is 30 percent inflation over a 20-year period and a taxpayer wants to sell some property that was purchased at the start of the period. If the asset is sold for 30 percent more than the purchase price, there is no real gain. Yet a tax is imposed. Depending on the specifics, taxpayers can sometimes pay tax even when assets have lost value in real terms. And it is very common for capital gains taxes to consume large amounts of any real gain that has occurred, which is yet another reason for the lock-in effect. Aldridge and Pomerleau (2013) show that the average effective capital gains rate in the US between 1950 and 2012 was 42.5 percent, almost double the statutory rate and higher than the top personal income rate.[2]

2 This understates the case, as it excludes years where the average effective rate was infinite.

4 Capital gains taxes contribute to the problem of "debt bias," which occurs when there is a tax advantage for corporate investments to be financed by debt instead of equity. This distorts economic behavior by leading businesses to take on more debt than they otherwise would. Excessive debt increases the probability of bankruptcy for the firm and contributes to systemic risk.

The bottom line is that capital gains taxes raise revenues for government (often very little), but they do so with considerable economic costs. The tax reduces returns on investment and entrepreneurship, thus distorting decision making by individuals and businesses. This can have a substantial impact on the reallocation of capital, the available stock of capital, compliance costs, and the level of entrepreneurship. We now turn to a review of the research on the economic consequences of capital gains taxes.

Academic research on the economic costs of capital gains taxes

Veldhuis, Godin, and Clemens (2007) and Clemens, Lammam, and Lo (2014) carried out extensive literature reviews on the economic costs of capital gains taxes with a particular focus on the reallocation of capital, the stock of capital, compliance costs, and the marginal efficiency cost. This section draws heavily on their work and incorporates new empirical and theoretical research to summarize the key findings of academic research on the general economic impacts of capital gains taxes.

The "user cost of capital" and the stock of capital: Several studies have investigated the link between capital gains taxation, the cost of venture capital financing and the supply of capital, and found theoretical and empirical evidence suggesting a direct causality between a lower tax rate and a greater supply of venture capital.[3] Other research has shown how venture capital affects not only the quantity, but also the quality of entre-

3 See Poterba (1989a, 1989b); Gompers and Lerner (1998), Jeng and Wells (2000), Keuschnigg (2003, 2004), Keuschnigg and Nielsen (2001, 2003a, 2003b, 2004a, 2004b, 2004c), and Armour and Cumming (2006).

preneurial development. Hellmann and Puri (2000) found that obtaining venture capital is associated with a faster time to market, especially for innovator firms,[4] and that firms backed by venture capital introduce more radical innovations. Audretsch and Lehmann (2004) found evidence that small and innovative German firms are more likely to be financed by venture capital, and that the presence of venture capitalists positively affected the growth rate of firms. David Guenther and Michael Willenborg (1999) found that the US government's 1993 decision to reduce the capital gains tax rate on small business increased the price that small businesses were able to charge for their stock, consistent with past research findings that capital gains tax rate reductions lower the cost of capital for such businesses. Harry Huizinga, Johannes Voget, and Wolf Wagner (2012) measured the impact of capital gains taxes on the cost of capital in the context of international corporate mergers and acquisitions and found that the effective tax rate on capital gains reflected in takeover prices (after accounting for deductions of realized losses on other shares) is 7 percent, and that it raises the cost of capital by 5.3 percent. This indicates that capital gains taxation is a significant cost to firms when issuing new equity.

Marginal efficiency costs: All taxes impose efficiency (economic) costs on society by distorting behavior. Numerous studies have estimated the economic costs of different types of taxes using what is referred to as the marginal efficiency cost. The goal is to understand which types of taxes impose the least (or highest) cost on the economy. The empirical literature on marginal efficiency cost finds that capital-based taxes impose greater economic costs than other forms of taxation. The most widely cited calculations of marginal efficiency costs include those by Dale Jorgensen and Kun-Young Yun (1991), who found that US capital-based taxes (such as capital gains taxes) impose a marginal cost of $0.92 for one additional dollar of revenue compared to $0.26 for consumption taxes. In 2004, the Canadian government's department of finance published a study by

4 Defined as those firms that are the first to introduce new products or services for which no close substitute can be found in the market, in contrast to imitator firms.

Maximilian Baylor and Louis Beausejour, which found that a $1 decrease in personal income taxes on capital (such as capital gains, dividends, and interest income) increases society's well-being by $1.30; by comparison, a similar decrease in consumption taxes only produces a $0.10 benefit. The efficiency of taxation was also explored and discussed by the Quebec government's Ministry of Finance in the province's 2005–2006 budget, which found that a reduction in capital gains taxes yields more economic benefits than a reduction in other types of taxes, such as sales taxes. Reducing the capital gains tax by $1 would yield a $1.21 increase in GDP, whereas a decrease of $1 in the sales tax would only increase GDP by $0.54.[5] Erwin Diewert and Denis Lawrence (1998) found that the costs to the economy of raising revenue in Australia through taxes on capital tend to be high, and they recommended that Australia significantly reduce its capital gains tax rate. Peter Kugler and Carlos Lenz (2001) examined the experience of regional governments (cantons) in Switzerland that eliminated their capital gains taxes and showed that the economy was 1 to 3 percent larger due to the elimination of capital gains taxes. These comparisons underscore the economic benefits that are lost with significant capital gains taxation.

- *Lock-in effect:* The capital gains tax is only imposed when an investor opts to withdraw his or her investment from the market and realize the capital gain. One of the most significant resulting economic effects is the incentive this creates for owners of capital to retain their current investments, even if more profitable and productive opportunities are available. Economists refer to this result as the "lock-in" effect. Capital that is locked into suboptimal investments and not reallocated to more profitable opportunities hinders growth in the economy. While the magnitude of the lock-in effect depends on numerous factors (such as the rate of return on the initial and new investments and the investor's time horizon), economic costs result because capital gains taxes discourage the reallocation of capital from lower to higher yielding uses. Numerous academic studies

5 The GDP refers to inflation-adjusted (real) GDP.

have investigated the lock-in effect.[6] An influential paper by Harvard economist 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, using the sale of corporate stocks at a profit as their test. The authors found that the realizing of capital gains is sensitive to the marginal tax rate and concluded that a 10.0 percentage point increase in the capital gains tax rate reduced the probability of selling a stock by 6.5 percentage points. Paul Bolster, Lawrence Lindsey, and Andrew Mitrusi (1989) found that an expected increase in the capital gains tax rate induced US investors to reallocate capital prior to the change to avoid higher taxes. James Chyz and Oliver Li (2012) found that tax-sensitive investors[7] reduced holdings of shares with embedded gains after the 1997 Taxpayer Relief Act in the US was enacted. Benjamin Ayers, Craig Lefanowicz, and John Robinson (2007) showed that not only do capital gains taxes affect asset prices and market activity, they also influence corporate acquisition activity and the movement of capital across different organizations.

- *Compliance costs:* In addition to the economic costs imposed by changing incentives for productive behavior as demonstrated by the lock-in effect and reductions in the availability of capital, as well as other effects yet to be discussed, capital gains taxes also impose direct costs related to compliance and administration. The Fraser

6 Many studies provide empirical evidence of the 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. See also Landsman and Shackelford (1995), Shackelford (2000), Blouin et al. (2000), and Dai et al. (2006), for empirical evidence of the lock-in effect.

7 Tax-sensitive institutional investors include mutual funds and their managers and investment advisors. Less tax-sensitive institutional investors included tax-exempt institutions such as pension funds, university endowments, and foundations, as well as insurance companies, which are less likely to exhibit trading behavior that is influenced by changes in individual tax rates.

Institute has published research that measures compliance costs, such as expenses related to professional services and reporting, and calculating and remitting tax payments. This research estimates the extent to which different factors—such as socio-demographic characteristics, the use of different tax provisions, and different types of income including capital gains income—influence tax compliance costs. The most recent study (Speer et al., 2014) finds that Canadian individuals who reported capital gains income incurred, on average, higher compliance costs than did those who did not report any such income. Specifically, the direct compliance costs for those individuals reporting capital gains income was, on average, 13.8 percent higher. These findings are consistent with research in other jurisdictions on the compliance costs associated with capital gains taxes. For instance, Blumenthal and Slemrod (1992) found that American tax filers who received capital gains income incurred higher compliance costs than those who reported no such income. Capital gains income increased the time that individuals spent complying with the tax system by 7.9 hours, increased the financial resources they spent on professional tax services by about $21, and increased the total cost of compliance by $143 (all figures in 1989 US dollars). Likewise, Binh Tran-Nam et al. (2000) found that capital gains taxes imposed significant costs on Australian firms—6.8 percent of total income tax revenue collected (including income tax revenue generated from capital gains)—and that for individuals, low-income groups bore disproportionately high compliance costs.

- *Revenue from capital gains taxes:* In addition to the many deleterious economic effects associated with capital gains taxes discussed above, they also tend to raise only small amounts of revenue for governments. For example, according to data from the OECD, in 2016 capital gains taxes levied on individuals represented only 1.1 percent of total government tax revenue in the United Kingdom and 3.3 percent of total tax revenues in the United States (OECD, 2017). Data on the percentage of tax revenue raised by capital gains taxes on individuals in Australia and Canada is more difficult to attain.

> However, according to Canada's federal department of finance, in 2011, the federal tax revenue gained from capital gains taxation was $2.8 billion, compared with the revenue gained from all personal income taxes of $120.5 billion, and total revenue of $249.1 billion.[8] This means that capital gains taxes only represent 2.3 percent of the federal income tax revenue and 1.1 percent of overall federal government revenue (Clemens, Lammam, and Lo, 2014). Even these figures likely overstate the true revenue returns of capital gains taxation, as they do not account for the economic effects of the tax on the overall tax base. In other words, slower economic growth reduces revenues collected through other taxes, thereby offsetting some, if not all, of the revenues directly collected through capital gains taxation. And due to global capital mobility and tax competition, high capital gains rates will drive investment toward more favorable jurisdictions.[9]

To conclude, capital gains taxes carry considerable economic costs, while raising comparatively little revenue for governments, and for some governments are likely even subtracting from net revenues. Although this section has focused more on the general economic impacts of capital gains taxes rather than on specifically how capital gains taxes directly affect entrepreneurship, issues like the lock-in effect, the stock of capital, and compliance costs all have important consequences for entrepreneurs.

8 The figures were obtained during an exchange between Fraser Institute researchers and the department of finance Canada on May 30, 2014.

9 When taxpayers can shift productive activities to lower tax environments, governments must compete to attract investment. Such competition serves as a constraint on the desire of politicians to over tax, and the long-run result is a political and economic environment better for both taxpayers and the global economy.

3. Capital gains taxation and entrepreneurship

Entrepreneurs risk their own capital (and that of venture capitalists and other financiers) and spend time in the hopes of ultimately profiting from an unproven technology, product, or service. The trade-off is that they expect to be compensated if the business matures and generates financial returns. This process is key to a successful economy because it produces new technologies, products, and services, and ultimately leads to job creation and increased prosperity thanks to a better allocation of labor and capital.

Capital gains taxes reduce the return that entrepreneurs and investors receive when selling some or all of a new technology or business. This diminishes the reward for entrepreneurial risk-taking and reduces the number of entrepreneurs and the investors that support them.

Capital gains taxes also affect an entrepreneur's ability to attract managers from traditional business sectors. Start-up firms cannot typically offer salaries that are competitive with established businesses and therefore often recruit managers using equity stakes. Capital gains taxes reduce the returns that these managers receive, thereby diminishing the likelihood that start-ups will be able to attract the talent that growth requires. Research has also found that capital gains taxes can lengthen the time that entrepreneurs hold on to their businesses instead of selling them to professional managers.

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 due to capital gains taxes affects the actors in the entrepreneurial process—the entrepreneurs and their financiers. New research has also sought to better understand the impact of capital gains taxes on entrepreneurial innovation and the development of new ideas.

Effect on entrepreneurial demand

Professor James Poterba (1989a) 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 to the expected pay-off 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 burden between wages and capital gains, a reduction in capital gains taxes would lead more skilled people into entrepreneurship and increase the demand for venture capital.

Christian Keuschnigg and Soren Bo Nielsen (2003a) carried out a unique theoretical study to understand what policies encourage individuals to seek regular employment and which ones lead them to pursue entrepreneurial activities (or enter the "entrepreneurial market" as the authors described it).[10] Similar to Poterba, the study found that capital income taxation reduces the supply of entrepreneurs in the market. Keuschnigg and Nielsen later revisited this topic and found that "even a small capital gains tax… diminishes incentives to provide entrepreneurial effort and managerial support" (2004b: 1033).

Donald Bruce and Mahammed Mohsin (2006) examined the effect of US personal income tax rates, capital gains taxes, and corporate income tax rates on self-employment rates—a proxy for entrepreneurship. They 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 the self-employment rate.

V.V. Chari, Mikhail Golosov, and Aleh Tsyvinski (2004) examined how the "lock-in effect" can affect the efficient management of entrepreneurial firms under the assumption that some individuals have a comparative advantage in starting new business enterprises, while others have a comparative advantage in managing and growing firms. This model implies that those who are better at starting firms should sell their successful startups to professional managers and start new business enterprises. Chari, Golosov, and Tsyvinski specifically evaluated the effect that capital gains taxes have in creating transaction costs that lead entrepreneurs to remain a part of their existing business longer than would be considered efficient. The result of their analysis was that eliminating a capital gains tax rate of

10 The entrepreneurial market refers to the entrepreneurial labor market, where households can choose to be either normal workers facing fewer risks and lower returns, or entrepreneurs who face greater risks and higher returns.

20 percent would increase the percentage of entrepreneurs who sell their businesses from 10 to 29 percent. The implication of this result is that more entrepreneurs would be free to start new business ventures, thus increasing the level of entrepreneurship in the economy.

Ricardo Cavalcanti and Andrés Erosa (2007) estimated the effect capital gains taxes have on business turnover. They identify two sources of value for closely-held firms: the common value that can be transferred to other owners, and the idiosyncratic component that depends on the specific owner. There is thus a societal benefit to business turnover because it provides an opportunity for new owners with potentially higher idiosyncratic value to acquire a firm. In their model, Cavalcanti and Erosa consider the effect that two possible changes in capital gains taxation—(1) a halving of the capital gains tax rate (28 percent to 14 percent) and (2) allowing capital gains to be indexed for inflation—could have on business turnover. The results of their study were that decreasing the capital gains tax rate by 50 percent would result in an increase in business turnover by 11 percent, and allowing gains to be indexed to inflation would increase business turnover by 7 percent. Cavalcanti and Erosa also estimated that eliminating the capital gains tax and replacing the revenues with a lump sum tax would increase total output by 0.48 percent, while capital gains taxes in their model only raise revenue equivalent to 0.03 percent.

The research cited above has focused exclusively on the effect of capital gains taxes on whether one decides to engage in entrepreneurial risk-taking. However, it is also important to consider how marginal income tax rates in general affect incentives to become self-employed or engage in entrepreneurial activity, as countries such as Australia and Canada tax capital gains based on their income tax rates.

A study by William Gentry and Glenn Hubbard (2000) used US data from 1979 to 1992 to analyze the impact of tax progressivity on the decision to become an entrepreneur (defined as self-employed). The authors found evidence that a more progressive tax structure reduced the probability of entering self-employment since, if tax rates are more progressive, entrepreneurs pay substantial taxes on profits earned, but save little through

taxes reduced by writing off losses incurred. In other words, progressivity with imperfect loss offsets creates a tax on "success" that discourages entry.

Herbert Schuetze (2000) looked at the effect of changes in marginal tax rates on the likelihood of self-employment in the United States and Canada. Using data for the period between 1983 and 1994, the author found that a 10 percent increase in marginal tax rates in a given year induced, for Canadian males, a 1.6 to 3.0 percent increase in the probability of being self-employed the following year, and a 2.1 to 3.7 percent increase in the probability of male self-employment in the US a year after the tax rate increase. Shuetze speculates that under-reporting of income when self-employed is a motivating factor. Schuetze and Gentry and Hubbard both found evidence that taxes affect decisions to become self-employed, but together show that increases in marginal taxes rates and convexity of the tax system push in opposite directions.

Based on the idea that individuals are attracted to entrepreneurial activity when the relative tax treatment of self-employment becomes favorable compared to taxes on wages and salaries, Tami Gurley-Calvez and Donald Bruce (2008) used US tax return data from 1979 to 1990, covering over 200,000 tax returns and 6,000 tax filers, to show that reducing marginal tax rates on wages and salaries reduces the duration of entrepreneurial activity by making wage-earning more attractive. The authors find that a one percentage point decrease in the marginal tax rate on wages and salaries increases the probability that entrepreneurial activity will cease by 9.17 percent for single tax filers and 3.98 percent for married tax filers. Similarly, reducing marginal tax rates faced by entrepreneurs lengthens the time spent on entrepreneurial activity. A one percentage point decrease in the marginal tax rate on entrepreneurship or self-employment income reduced the likelihood of ending entrepreneurial activity by 17.32 percent for single tax filers and by 7.81 percent for married tax filers. The relative magnitude of the effects is such that even across-the-board cuts would increase the longevity of entrepreneurial activity.

Effect on entrepreneurial financing

Another important effect that capital gains taxes can have on entrepreneurship is the availability of entrepreneurial financing, most often through venture capital funds. Harvard economists Paul Gompers and Josh Lerner (1998) investigated this by undertaking an empirical examination of 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 the capital gains tax was associated with a 3.8 percent reduction in venture capital funding.

Gentry (2016) investigated the effect of capital gains tax rates on the disbursement of venture capital funding. He identified an asymmetry between the typical tax treatment of capital gains versus capital losses. Specifically, taxpayers under most systems can deduct their capital losses for a given year, but the benefit requires the realization of positive gains against which to be deducted, with minor exceptions. Beyond that, the losses may usually be carried forward to be claimed against future gains (and sometimes carried back for a limited number of years against prior gains). This means that while gains are taxed immediately in the tax year that they are realized, losses may not always yield an immediate tax benefit. Indeed, they may prove non-recoverable if the carry-forwards expire or the firm fails. The tax benefit also diminishes the longer that losses must be carried forward before they can be deducted. The result is a penalty on risky investments. Gentry's model largely followed that of Gompers and Lerner (1998) but used a longer time series of data from US states that dated back to 1969. He found that a one percentage point increase in the marginal tax rate on capital gains was associated with a decrease in the disbursement of venture capital funds of $1.28 per capita to $3.48 per capital, depending on the model specification. Gentry then estimated that a one percentage point increase in the capital gains tax rate decreases venture capital investment into U.S. states by 5.4 to 14.6 percent.

4. Global capital gains tax rates

As discussed above, capital gains taxes place a high cost on entrepreneurial activities, thereby contributing to lower levels of entrepreneurship. This section will compare personal capital gains tax rates in Organisation for Economic Co-operation and Development (OECD) countries.

The structure and rates of capital gains vary considerably by country. Some countries like the United States and United Kingdom have a separate and distinct tax on capital gains; while others such as Australia and Canada tax capital gains through the regular income tax system. Some countries also tax gains from the sale of property or investment at differential rates. The rates of tax and levels of income at which those rates apply also differ among countries.

Figure 5 displays the top personal marginal capital gains tax rate on securities, investments, shares, etc., for 2016/17 in 35 OECD countries.[11] France has the highest top marginal tax rate on capital gains in the OECD at 60.5 percent.[12] Seven OECD countries—Belgium, Czech Republic, Luxembourg, Netherlands, New Zealand, Switzerland, and Turkey—do not levy personal capital gains tax rates. The population-weighted average top personal capital gains tax rate for the OECD in 2016/17 was 25.5 percent.

The United States had the 9th highest capital gains tax rate in the OECD in 2016/17.[13] Canada's average top capital gains tax rate of 26.5 percent ranked as the 12th highest in the OECD and was higher than the OECD average of 25.5 percent.[14] At 24.5 percent, Australia's top capital gains tax rate was only slightly lower than Canada's and the United States's. Com-

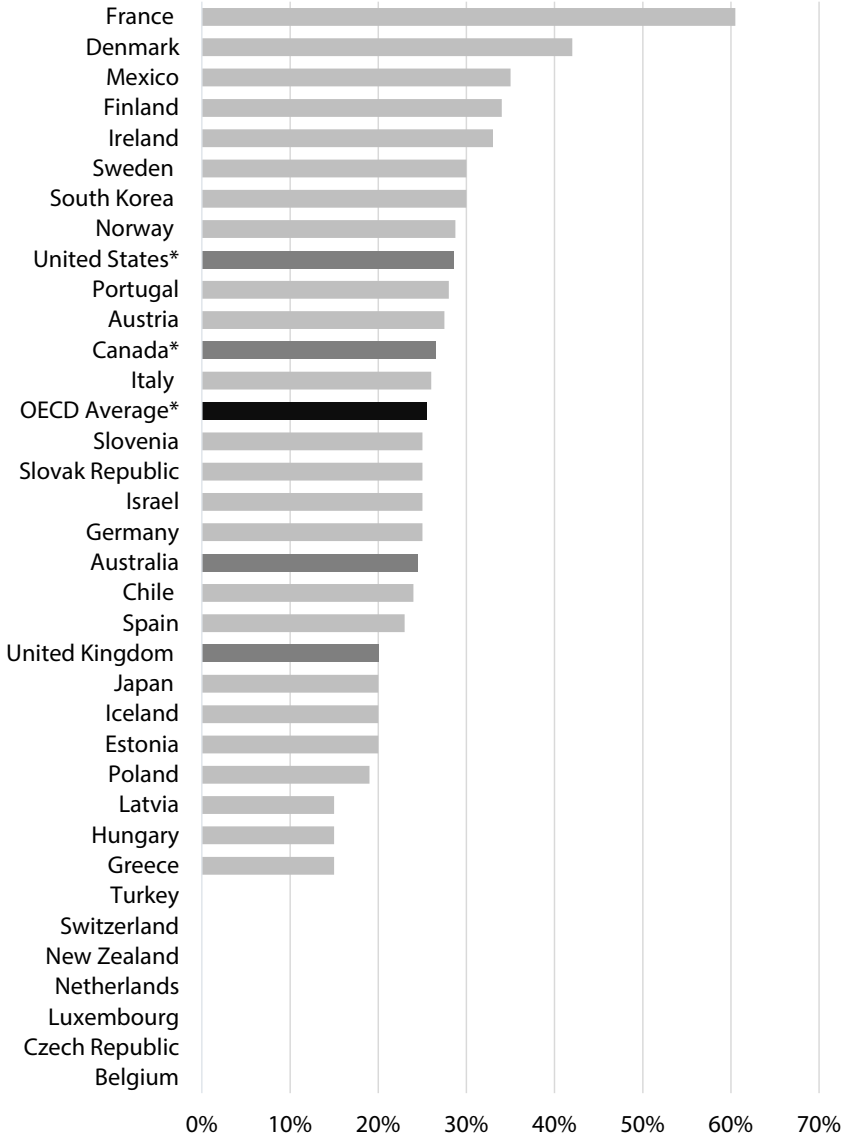
11 The capital gains tax rates discussed in this section refer to rates on personal capital gains, not corporate capital gains.

12 This rate for France includes the both the top capital gains tax rate of 45 percent and the special social security surcharge of approximately 15.5 percent.

13 The top US capital gains tax rate presented here is a population-weighted average of the top combined federal and state capital gains tax rates.

14 Similar to the US, Canada's top capital gains tax rate is representative of a population weighted combined federal and provincial average.

Figure 5: Top Personal Marginal Capital Gains Tax Rate in OECD Countries, 2016/17



* Population weighted average

Sources: Deloitte, 2016; EY, 2016; World Bank, 2017.

pared to Australia, Canada, and the United States, the United Kingdom had a relatively lower top capital gains tax rate in 2016/17 at 20 percent.[15]

It is important to note that the capital gains tax rates presented in Figure 5 apply at different levels of income in the various countries. That is, while the tax rates may be the same in two countries, the level of income at which those rates apply could be markedly different. In addition, when assessing Canada and the United States, it is important to remember that the capital gains tax rates presented for those two countries are weighted averages of the top combined federal and state or provincial capital gains tax rates. Indeed, within Canada and the United States there are substantial sub-national differences in both the top rates and the income at which those rates apply. For example, California has the top combined capital gains tax rate in the United States at 33 percent, which ties the western US state with Ireland for the 5th highest capital gains tax rate in the OECD. This is in contrast to a number of states which levy no state income taxes and thus have top capital gains tax rates of close to 25 percent.

Compared to other countries in the OECD, Australia, Canada, the United Kingdom, and the United States all have room for improvement when it comes to their top personal capital gains tax rates. The United States and Canada, for example, have top capital gains tax rates above the OECD average and rank in the top third of countries with the highest top capital gains tax rates in the OECD. While Australia and the United Kingdom have top capital gains tax rates under the OECD average, they, too, still have room for improvement as 11 and 14 countries have top capital gains tax rates lower than those in the United Kingdom and Australia, respectively. All four countries are thus able to improve their position on capital gains taxes in order to spur entrepreneurship.

It is also important to remember that the capital gains tax is a form of double taxation. In a new 2018 publication on the taxation of capital, the OECD acknowledged that, "…capital gain income on shares that is derived

15 For a more in-depth overview of the structure of capital gains taxes in Australia, Canada, the United Kingdom, and the United States, as well as a breakdown by Canadian provinces and US states, see the appendix.

from reinvested corporate profits is taxed first as corporate income and then again at the shareholder level when realised" (Harding and Marten, 2018).

Table 1 is from the study and shows details on tax rates and double taxation (though the data is from July 2016 and does not include, for instance, the 14 percentage-point reduction in the US corporate income tax).

Figure 6 is from the same OECD report. As with table 1, it doesn't reflect changes since July of 2016. For instance, in the United States, the combined tax rate is now down to 46.2 percent, so the country no longer has the dubious honor of having the highest combined rate in the industrialized world.[16]

5. Options for capital gains tax reform

As demographic changes exert downward pressure on entrepreneurship in different economies, policymakers should consider reforming capital gains taxation to help counteract the effect. There are a number of different policy options with regards to capital gains taxes that governments could use in order to increase entrepreneurship.

Eliminate capital gains taxes

One such option would be to completely eliminate capital gains taxes. As discussed above, capital gains taxes impose high costs on the economy and tend to represent a small share of tax revenues for governments. In other words, eliminating the capital gains tax could provide a considerable boost to economies at a small short-run fiscal cost, and potentially a large gain in tax revenues in the long-run. It would unlock capital for new and expanding firms, bolster entrepreneurship, and support investment and job creation. Moreover, the elimination of capital gains taxes would be the most comprehensive way to address the disincentive effects that capital gains

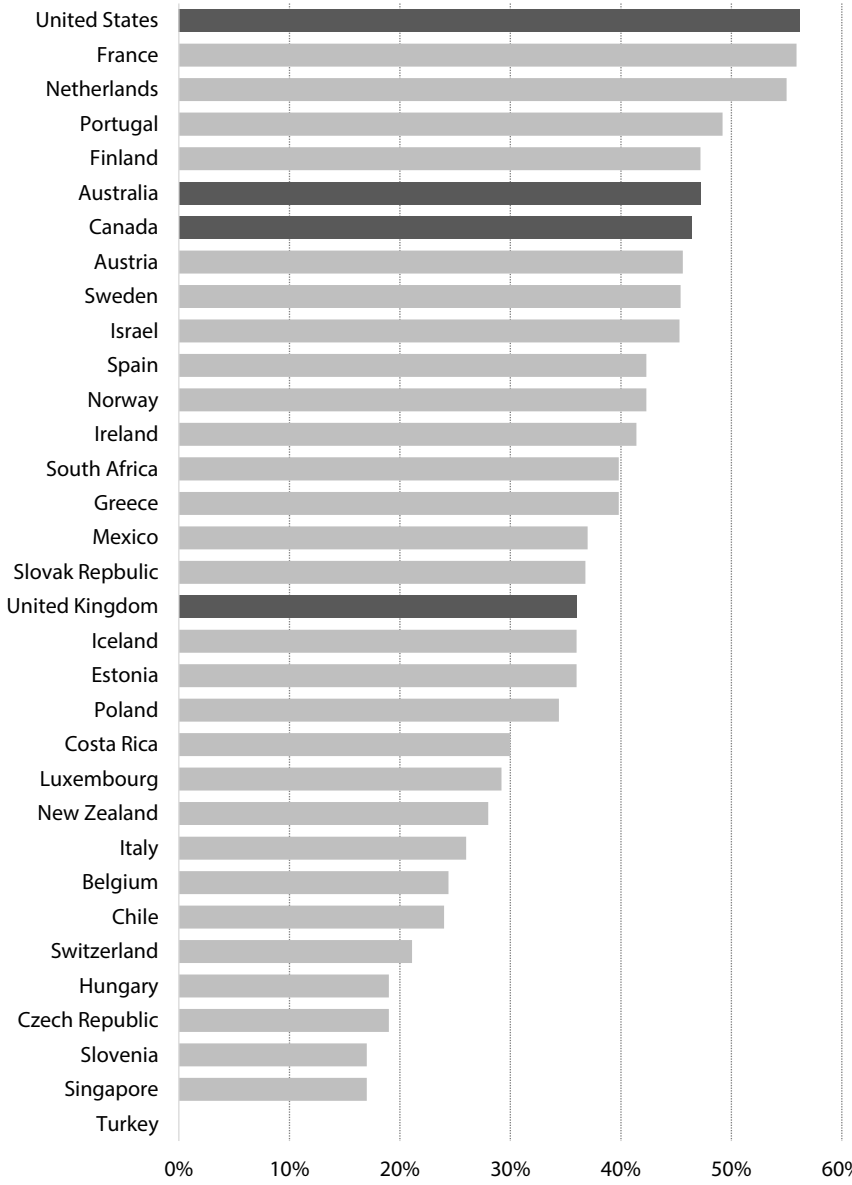
16 It appears the OECD does not include the social security surcharge when calculating the overall capital gains burden in France.

Table 1: Tax Payable on Capital Gains on Long-held Shares at the Corporate and Personal Levels, as of Juy 1, 2016

Country	Corporate Tax Rate (%)	Longest Holding Period (yrs)	Proportion Included in Income (%)	Final Withholding Tax Rate (%)	Shareholder Tax Rate (5)	Combined Tax Rate (%)
Australia	30.0	1	50	—	49.0	47.2
Austria	25.0	—	100	27.5	—	45.6
Belgium	34.0	—	—	—	—	24.4
Canada	26.8	—	50	—	53.5	46.4
Chile	24.0	1	—	—	—	24.0
Costa Rica	30.0	—	—	—	—	30.0
Czech Republic	19.0	3	—	—	—	19.0
Estonia	20.0	0	100	—	20.0	36.0
Finland	20.0	10	100	—	34.0	47.2
France	34.4	8	100	—	32.8	55.9
Greece	29.0	—	100	—	15.2	39.8
Hungary	19.0	5	—	—	—	19.0
Iceland	20.0	—	100	—	20.0	36.0
Ireland	12.5	—	100	—	33.0	41.4
Israel	25.0	—	100	—	27.0	45.3
Italy	31.3	—	100	—	26.0	26.0
Luxembourg	29.2	0.5	—	—	—	29.2
Mexico	30.0	—	100	—	10.0	37.0
Netherlands	25.0	—	100	—	30.0	55.0
New Zealand	28.0	—	—	—	—	28.0
Norway	25.0	—	100	—	28.8	42.3
Poland	19.0	—	100	—	19.0	34.4
Portugal	29.5	—	100	28	—	49.2
Singapore	17.0	—	—	—	—	17.0
Slovak Repbulic	22.0	—	100	19	—	36.8
Slovenia	17.0	20	—	—	—	17.0
South Africa	28.0	—	40	—	41.0	39.8
Spain	25.0	—	100	—	23.0	42.3
Sweden	22.0	—	100	—	30.0	45.4
Switzerland	21.1	—	—	—	—	21.1
Turkey	20.0	1	100	—	—	0.0
United Kingdom	20.0	1	100	—	20.0	36.0
United States	38.9	1	100	—	28.3	56.2

Source: Harding and Marten (2018).

Figure 6: Combined Tax Rates on Capital Gains on Long-held Shares, as of July 1, 2016



Source: Harding and Marten (2018)

taxes have on one's willingness to engage in entrepreneurial activities and self-employment. In addition, the elimination of capital gains taxes would also remove the deleterious effects that these taxes have on the availability of financing for entrepreneurial endeavors. Indeed, as shown in Figure 5, seven OECD countries already levy no tax on personal capital gains.

Consider the experiences of Hong Kong, New Zealand, and Switzerland, which currently do not impose capital gains taxes. There are slight differences between each of the jurisdictions with respect to the treatment of different types of assets (for instance, some Swiss cantons impose special taxes on capital gains realized on immovable business property), but overall all three of them have deliberately chosen a zero-rated capital gains tax rate as their general policy.

The choice to maintain zero-rated capital gains taxes is motivated in part by the research on the optimal structure of taxes and the marginal efficiency cost research with respect to capital gains taxes relative to other forms of taxation. But the issue of economic and tax competitiveness also looms large as jurisdictions compete to attract business activity and investment (see Stacey, 2014; Kirchner, 2014; Schaltegger and Winistoerfer, 2014; and Edwards and Mitchell, 2008).

In regards to Hong Kong in particular, economist Bill Stacey (2014) has discussed how the jurisdiction's zero capital gains tax rate has been a key part of Hong Kong's efforts to build itself as a financial centre and a location for regional corporate headquarters. The example of Hong Kong's zero capital gains tax rate and its attraction of financial capital is an important one for entrepreneurship, given that the availability of financial capital is often essential for the establishment of entrepreneurial firms.

Lower capital gains tax rates

As has been discussed, economic research shows that high capital taxes can discourage both the willingness of individuals to engage in entrepreneurial activities and the willingness of others to finance entrepreneurial endeavors. If governments did not want to eliminate capital gains taxes completely, another option to spur entrepreneurship through capital gains

taxes would be to lower capital gains tax rates. However, the way governments would lower capital gains tax rates would depend on the country.

Countries that have capital gains taxes separate from their income taxes—such as the United Kingdom and the United States—could simply lower their capital gains tax rates. The United Kingdom, for example, could lower its 20 percent capital gains tax rate on gains other than those from residential property to 10 percent, which would give the United Kingdom the lowest capital gains tax rate in the OECD out of the countries that levy capital gains taxes.

Countries that do not index capital gains for inflation, like the United States and most others, could choose to do so. Failing to index capital gains for inflation leads to higher effective rates and tax inequities, such as the potential to impose an infinite effective tax rate.

In the United States's federal system, either the federal government or the states could choose to lower their capital gains tax rates. Given that the majority of the top combined marginal capital gains tax rates in US states are the result of the federal capital gains tax rate, the broadest and largest lowering of capital gains tax rates in the United States would come from the federal government. One option for the US federal government would be to extend the capital gains tax rate applicable to individuals in lower income tax brackets to those in higher income tax brackets.

For example, in 2016 in the United States, those in the 10 and 15 percent tax brackets paid no tax on the sale of long term capital gains, while those in the 25, 28, 33, or 35 percent income tax brackets paid a tax rate of 15 percent on the sale of long-term capital gains, and those in the top tax bracket of 39.6 percent paid a capital gains tax rate of 20 percent.[17] The US federal government could tax the capital gains of those in the highest income bracket the same as those in lower income tax brackets, or they could reduce the statutory capital gains tax rates for those in all income tax brackets.

17 Note that high income earners are subject to additional taxes on their capital gains, making their effective capital gains tax rate higher than 20 percent.

In Australia and Canada, capital gains are treated as taxable income, meaning that capital gains are taxed under personal marginal tax rates. Both countries, however, have a 50 percent inclusion rate, meaning that only 50 percent of a capital gain is taxable. This effectively means that the top marginal tax rate on capital gains in each country is 50 percent of the top marginal personal tax rate.

That capital gains are taxed this way in Australia and Canada leaves two options for the countries to cut their capital gains tax rates. The first option would be for the Australian federal government and the Canadian federal or provincial governments to lower their personal income tax rates. The second option would be for governments in Australia and Canada to lower their capital gains inclusion rates. If Australia's government lowered their inclusion rate from 50 percent to 25 percent, they would have a top marginal capital gains tax rate of 12.3 percent, giving Australia the lowest rate in the OECD when comparing it to OECD countries which levy capital gains taxes (see table 2). Similarly, for Canada if the capital gains inclusion rate was lowered to 25 percent, the top combined average capital gains tax rate would be 13.2 percent. Lowering the inclusion rate to 25 percent would provide a significant boost to each country's competitiveness when it comes to attracting capital investment and likely also help spur entrepreneurship.

Capital gains rollover

A third policy option would be for governments to introduce rollover mechanisms for capital gains investment. This type of policy reform has already been enacted to some extent in places like the United States, meaning that other countries could draw from international experience in order to help design their policies.

Introducing a rollover mechanism would effectively keep the basic parameters of the capital gains tax regime in place but allow for a deferral of capital gains taxes for individuals on the sale of assets when the proceeds are reinvested within a certain timeframe, perhaps six months. The purpose of such a policy would be to mitigate the lock-in effect and encourage investors to shift capital from less productive investments to new,

Table 2: Top Marginal Capital Gains Tax Rate with a 25 Percent Inclusion Rate, 2016/17

Jurisdiction	Current Top Marginal Capital Gains Tax Rate	Top Marginal Capital Gains Tax Rate (25% inclusion)
Australia	24.5%	12.3%
Canada*	26.5%	13.2%
British Columbia	23.9%	11.9%
Alberta	24.0%	12.0%
Saskatchewan	24.0%	12.0%
Manitoba	25.2%	12.6%
Ontario	26.8%	13.4%
Quebec	29.4%	14.7%
New Brunswick	26.7%	13.3%
Nova Scotia	27.0%	13.5%
Prince Edward Island	25.7%	12.8%
Newfoundlan & Labrador	24.9%	12.5%

Note: Population weighted average

Sources: Deloitte, 2016; EY, 2016; ATO, 2017; Canada 2017a, 2017b; PwC, 2016; authors caluclations

more productive opportunities. In effect, this policy would not eliminate or change the capital gains tax rate but rather defer the tax if the accumulated proceeds are reinvested in eligible assets—like entrepreneurial endeavors—in the name of encouraging capital activity.

A rollover mechanism could be enacted in different ways. One of the more compelling proposals is set out by Mintz and Wilson (2006) and involves the creation of Capital Gains Deferral Accounts (CGDAs), which would allow individuals to roll over investments within the account without having to pay capital gains until assets are fully withdrawn. Their proposal involves differentiated rates that would apply as the assets are withdrawn and a lifetime limit on the amounts to which investors can contribute to their CGDAs.

The specific details of their plan could be flexible, varying by country, and there would be room for governments to impose different rate structures or investment limits than those set out in the proposal. But a key feature of the CGDA model is the ability to track investments and asset sales for the purpose of implementing a rollover mechanism. This model could go a long way towards addressing legitimate concerns about the complexity of introducing a capital gains rollover and the need for significant bureaucratic oversight and enforcement. The CGDA model could produce the upside of mitigating the lock-in effect, and encouraging capital reallocation and entrepreneurial financing with minimal downside of tax complexity and high administration costs.

6. Conclusion

Reforming capital gains taxes is one way in which governments could try to stem likely reductions in entrepreneurship resulting from demographic changes. As has been discussed throughout this chapter, capital gains taxes impose high economic costs and reduce the incentives for entrepreneurial risk-taking and the level of financing available to entrepreneurs.

In order to boost entrepreneurship through capital gains tax reform, this chapter has outlined three policy options for governments. The first option is to eliminate capital gains taxes. Evidence from OECD countries which levy no capital gains taxes suggests that such a move could be beneficial for various aspects of the entrepreneurial process. Eliminating capital gains taxes also removes from the tax code an anti-growth bias against savings and investment. Another option for governments would be to lower their capital gains tax rates, which can be accomplished by lowering the capital gains or inclusion rate directly, or by indexing for inflation. This would help lower the economic costs that capital gains taxes place on entrepreneurship. A final option for governments would be to introduce a rollover mechanism for capital gains. Enacting this policy would allow earners of capital gains to defer the taxes on those gains if they are reinvested, thereby mitigating some of lock-in effects that result from capital gains taxes.

As governments consider policy responses to spur entrepreneurship in the wake of demographic changes, capital gains tax reform offers considerable potential, as the economic evidence is clear that these types of taxes constrain the level of entrepreneurship in an economy. Reforming capital gains taxes would also have only a minimal impact on government revenues. Most countries, thanks to the pressure of international tax competition and the need to remain economically competitive and to mitigate the damage of double taxation, already discount capital gains taxation to some degree or another compared to wage income. Further reductions—or taking the evidence to its logical conclusion and eliminating capital gains taxes altogether—would be a logical next step.

Appendix: Capital gains taxes in Australia, Canada, the United Kingdom, and the United States

The structure of capital gains taxes can vary widely between countries. This appendix provides an overview of capital gains taxes in Australia, Canada, the United Kingdom, and the United States. This section focuses on personal capital gains taxes applicable to residents in each country.

Australia

In Australia, gains realized from the sale of taxable assets—including real estate, personal property, and shares acquired for personal investment—are treated taxable income, and income taxes are levied by the Commonwealth (federal government). If the asset was held for less than 12 months, the entire gain is taxable. However, if the asset was held for more than 12 months before its disposal, the individual may receive a 50 percent capital gains tax discount, where 50 percent of the capital gain will be disregarded. Assets acquired before September 19, 1985, are generally exempt from the

Table A1: Australian Top Marginal Capital Gains Tax Rate, 2016/17 (in AU$)

	Personal Income Tax		Capital Gains Tax
	Top Marginal Rate	Threshold for Top Marginal Rate	Top Marginal Rate
Federal (Commonwealth)	49%	$180,000	24.5%

Sources: Deloitte, 2016; EY, 2016; ATO, 2017.

capital gains tax in Australia. As table A1 shows, the top marginal capital gains tax rate in Australia for 2016/17 was 23.5 percent.[18]

Canada

Capital gains for residents in Canada are treated as taxable income at the applicable combined federal and provincial marginal tax rate. Capital gains taxes are levied on real estate, personal property, and shares for personal investment, although the sale of a principal residence is exempted from the capital gains tax. Similar to other countries, only 50 percent of the year's capital gains are subjected to the tax.

Due to the provincial component of capital gains taxation in Canada, capital gains tax rates and income thresholds in particular vary widely across the country (see table A2). The Canadian province with the highest top combined marginal capital gains tax rate in 2016/17 was Quebec at 29.4 percent. British Columbia had the lowest top marginal tax rate on capital gains at 23.9 percent. For 2016/17, the population-weighted average top marginal tax rate on capital gains in Canada was 26.5 percent.

18 The stated top marginal income tax rate for Australia in 2015/16 is 45 percent. However, effective July 1, 2014, Australians with taxable income above AU$180,000 are subject an additional two percent Temporary Budget Repair Levy on their income. In addition, resident taxpayers in Australia are subject to a two percent Medicare Levy on their income.

Table A2: Canadian Top Marginal Capital Gains Tax Rate, 2016/17 (in CA$)

	Personal Income Tax		Capital Gains Tax	
	Top Marginal Rate	Threshold for Top Marginal Rate	Top Marginal Rate	Top Marginal Combined Rate
Federal	33.0%	$200,000	16.5%	—
British Columbia	14.7%	$106,543	7.4%	23.9%
Alberta	15.0%	$300,000	7.5%	24.0%
Saskatchewan	15.0%	$127,430	7.5%	24.0%
Manitoba	17.4%	$67,000	8.7%	25.2%
Ontario	20.5%	$220,000	10.3%	26.8%
Quebec	25.8%	$103,150	12.9%	29.4%
New Brunswick	20.3%	$150,000	10.2%	26.7%
Nova Scotia	21.0%	$150,000	10.5%	27.0%
Prince Edward Island	18.4%	$98,314	9.2%	25.7%
Newfoundlan & Labrador	16.8%	$175,700	8.4%	24.9%

Note: Includes surtax rates for Ontario and PEI.

Sources: Canada 2017a, 2017b; Deloitte, 2016; EY, 2016; PwC, 2016.

Manitoba had the lowest threshold at which the top marginal tax rate for capital gains applied ($67,000), meaning that income over that amount would be taxed at the highest marginal rate. Alberta had the highest income threshold for the top marginal rate at $300,000.

United Kingdom

In the United Kingdom, capital gains are taxed under a schedule different from income. As of April 6, 2016, if taxable income is within the basic rate tax bracket,[19] an individual is subject to a capital gains tax of either 10 or 18

19 The United Kingdom has three income tax brackets in 2016/17. The first is known as the basic rate, which is on the first £32,000 of income. Income in this bracket is taxed at a rate of 20 percent. The next income tax bracket, known as the higher rate, applies

Table A3: United Kingdom Top Capital Gains Tax Rate, 2016/17 (in £)

	Income Tax Threshold	Top Capital Gains Tax Rate
United Kingdom	£32,000	20%/28%

Note: As of April 6, 2016, an additional capital gains tax rate has been introduced into the UK. Individuals in the income thresholds to which the top capital gains tax rates apply pay 28% on your gains from residential property and 20% on your gains from other chargeable assets.

Source: EY, 2016.

percent depending on the type of asset that is sold. If taxable income is in the higher or additional tax bracket, the capital gains tax is either 20 or 28 percent depending on the asset (see table A3). Any capital gain above the £11,100 individual annual exemption is taxed at its full amount.

United States

Federally, in the United States, short-term capital gains realized on assets held for less than 12 months are subject to ordinary income tax rates. Capital gains realized on assets held over 12 months are taxed at lower preferential rates than income taxes. For example, those with income placing them in the 10 or 15 percent income tax brackets[20] have capital gains tax rates on long term assets of zero percent. Those in the top income tax bracket have their capital gains taxed at a rate of 20 percent. And there is also a separate tax from the Obamacare legislation that effectively increases the capital gains rate tax on high-income investors by another 3.8

to income between £32,001–150,000 and has a tax rate of 40 percent. The final income tax bracket, known as the additional rate band, applies to income over £150,000 and has a rate of 45 percent (UK, 2015).

20 In the United States, the income threshold for each tax bracket differs depending on whether the taxes are filed by an individual, a married couple filing a joint return, a married couple filing separate returns, or a head of household. See EY (2016) for a breakdown of income tax brackets by the status of the tax filer(s).

Table A4: United States Top Combined Capital Gains Tax Rate, 2016/17

State	Top Combined Marginal Capital Gains Tax Rate
Alabama	27.7%
Alaska	25.0%
Arizona	27.7%
Arkansas	27.1%
California	33.0%
Colorado	27.8%
Connecticut	29.1%
Delaware	29.3%
District of Columbia	30.4%
Florida	25.0%
Georgia	28.6%
Hawaii	29.2%
Idaho	29.4%
Illinois	27.2%
Indiana	27.9%
Iowa	29.7%
Kansas	27.8%
Kentucky	29.9%
Louisiana	27.9%
Maine	29.3%
Maryland	30.2%
Massachusetts	28.1%
Michigan	27.7%
Minnesota	30.9%
Mississippi	28.0%
Missouri	28.6%
Montana	27.9%
Nebraska	29.1%
Nevada	25.0%
New Hampshire	25.0%
New Jersey	30.7%
New Mexico	26.5%
New York	31.6%

continued next page

Table A4 (continued)

State	Top Combined Marginal Capital Gains Tax Rate
North Carolina	28.5%
North Dakota	26.3%
Ohio	29.4%
Oklahoma	28.2%
Oregon	31.2%
Pennsylvania	28.6%
Rhode Island	28.6%
South Carolina	27.3%
South Dakota	25.0%
Tennessee	25.0%
Texas	25.0%
Utah	28.0%
Vermont	30.4%
Virginia	28.5%
Washington	25.0%
West Virginia	28.9%
Wisconsin	28.2%
Wyoming	25.0%

Source: Potosky, 2016.

percentage points (Internal Revenue Service, 2017). The capital gains tax rate for those in any other income tax brackets is 15 percent in 2016/17.

Most states in the United States also levy capital gains taxes on the gains from the disposal of assets. The top combined marginal capital gains tax rates range from a low of 25 percent in states with no state personal income tax to a high of 33 percent in California (see table A4).[21] The pop-

21 The states with no state personal income tax are Alaska, Florida, Nevada, New Hampshire, South Dakota, Tennessee, Texas, Washington, and Wyoming. Note that the lowest top combined marginal capital gains tax rates are higher than the top federal

ulation-weighted average top combined marginal capital gains tax rate for the United States in 2016 was 28.5 percent.

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