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Corporate loss utilization

OFFICE OF THE PARLIAMENTARY BUDGET OFFICER
BUREAU DU DIRECTEUR PARLEMENTAIRE DU BUDGET

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This report analyses the utilization of net operating and capital losses by Canadian corporations over 2000 to 2020 across different sectors of the economy.

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Executive Summary

In terms of fiscal planning, corporate income tax (CIT) revenue is one of the most difficult and complex categories of budgetary revenue to project. One of the reasons for this is that it requires projecting the profits of individual corporations as well as their past and potential future losses and the deductibility of those losses.

In this report we analyze corporate losses and their utilization by firms over 2000 to 2020 across different sectors of the economy. Specifically, we focus on the utilization of net operating (non-capital) and capital losses, which, on average, represent more than 95 per cent of total losses incurred by corporations.

Key findings

- Claimed carryback refunds and loss carryforward deductions, on average, reduced corporate income tax by $8 billion, or 21.6 per cent per year. This corresponds to $2.7 billion in CIT carryback refunds and $5.3 billion in loss carryforward deductions, on an annual basis.
- During economic downturns, corporations increased their utilization of loss carrybacks as their need for cash increased and access to liquidity was constrained. That said, carryforward deductions declined during these periods as firms' incomes contracted, constraining their ability to use these deductions.
    - In 2008, we estimate that this resulted in a loss carryback CIT refund of $6.8 billion and a loss carryforward deduction of $4.9 billion, collectively reducing corporate income tax by 37.4 per cent.
- For fiscal planning purposes, this stresses the importance of considering how many losses could be generated during economic downturns and their associated carryback CIT refund.
- Most firms carry losses forward because they are not able to generate sufficient taxable income to utilize them. As such, the stock of losses carried forward has consistently increased, especially during economic downturns.
- From a fiscal planning perspective, the stock of loss carryforwards represents a fiscal risk, since profitable corporations may utilize some, or all, of their accumulated loss carryforwards to reduce their corporate income taxes payable in that year.

  - Based on past experience, $12.3 billion of the stock of losses carried forward could be further used as carryforward deductions in a given year, annually lowering corporate income tax revenues by an additional $1.7 billion, which represents 2.1 per cent of our October 2022 CIT revenue projection.

- The effective use of losses varies across sectors, with some sectors taking longer to utilize their losses and carrying forward larger stocks of losses. This could affect the responsiveness of sectors to new tax policy measures.

1. Introduction

In terms of fiscal planning, corporate income tax (CIT) revenue is one of the most difficult and complex categories of budgetary revenue to project. One of the reasons for this is that it requires projecting the profits of individual corporations adjusted for their generation and use of tax losses.[1]

Analyzing corporate losses and when firms utilize them could improve CIT revenue forecasting performance, as well as enhance our understanding of the impact that economic downturns have on loss utilization.[2] Additionally, such analysis could help to inform cost estimates of proposed corporate income tax measures.[3]

This report analyzes corporate losses and their utilization by firms over 2000 to 2020. Specifically, it focuses on the utilization of net operating (non-capital) and capital losses, which, on average, represent more than 95 per cent of total losses incurred by corporations.[4]

Net operating losses occur when a corporation incurs more expenses than revenues, while capital losses occur when a corporation sells an asset at a price that is lower than the remaining value of its amortization.

Under the corporate income tax system, corporations can carry back their net operating and capital losses over three preceding years to receive an immediate refund of taxes paid, and/or carry forward their net operating losses over 20 years and their capital losses indefinitely to potentially reduce future tax liabilities.[5] In both cases, the loss (carryback or carryforward) reduces the firm's taxable income in the applicable tax year.

From the Government's perspective, the impact on CIT revenue is, in general, equal to the amount of the loss (carryback or carryforward) multiplied by the effective CIT rate.

From a firm's perspective, a loss carryback is more beneficial than a loss carryforward. First, the loss carryback results in an immediate reduction in CIT owed. Second, the value of the losses carried forward will erode over time given the time value of money.

That said, the carryback amount is restricted by the net income realized by a firm over the three-year period for which they can apply the loss carryback. Consequently, firms typically carry a significant portion of their losses forward.

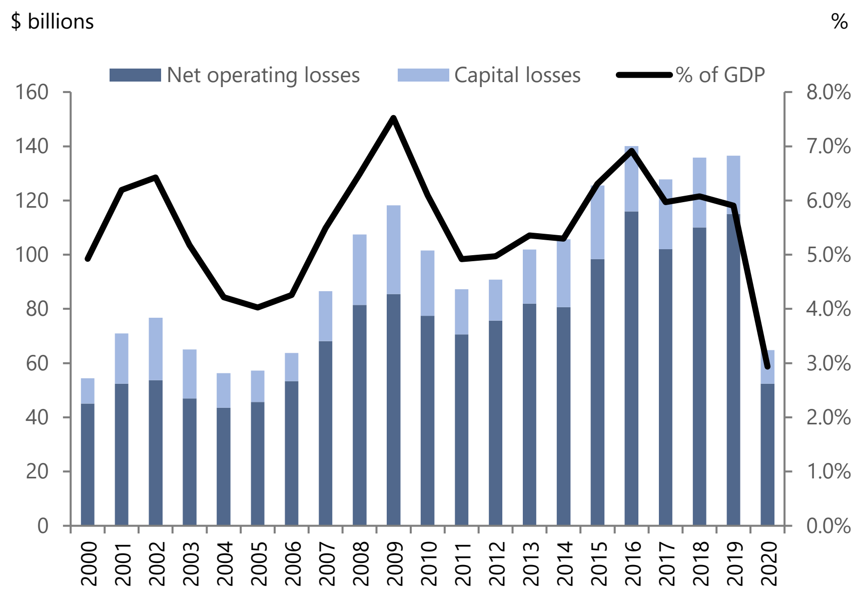
The next section briefly reviews corporate losses over the 2000-2020 period. It is followed by an analysis of corporate loss carrybacks and then loss carryforwards. The report closes with the evolution of the stock of corporate loss carryforwards.

2. Corporate losses

Each year, about one third of all firms report either net operating or capital losses. Over 2000 to 2019, the number of firms with annual losses increased from 502,000 to 802,000, or by 2.5 per cent per year, on average—broadly in line with growth in the number of firms in the economy.

Over the same period, net operating and capital losses, combined, increased from $54.4 billion to $136.5 billion, or by 5 per cent per year, on average. This growth is consistent with the increase in the number of firms with losses and inflation (Figure 2-1).

Figure 2-1 Corporate net operating and capital losses



Sources: Canada Revenue Agency, Statistics Canada and Office of the Parliamentary Budget Officer.

Note: Data are in business years. For example, 2019 corresponds to a corporation's fiscal year ending between April 1, 2019 and March 31, 2020.

Losses for 2020 are prorated for incomplete data. Approximately half of corporations had filed their return at the date of compiling of our database.

Both net operating and capital losses increased during economic downturns. For example, on average, by the end of the dotcom bubble, global financial crisis, and the 2015-2016 oil price shock, losses increased by more than 30 per cent compared with non-recessionary periods and represented a larger share of the economy. The ratio of losses to GDP peaked, on average, at 7.0 per cent in 2002, 2009 and 2016 respectively. Following these economic slowdowns, losses as a share of the economy slowly declined.

A potential exception to this is the COVID-19 downturn in 2020. Preliminary data suggest substantially lower net operating and capital losses in 2020 than in prior years.[6] Given that (annual) nominal GDP in 2020 declined by the same order of magnitude as in the global financial crisis (4.5 per cent vs 5.2 per cent), smaller losses in 2020 could potentially be explained by the support that the Government provided through the various programs it offered during the pandemic.

From a sectoral perspective, over 2000 to 2020, the Mining, quarrying, and oil and gas extraction sector followed by the Management, Finance, and Manufacturing sectors generated the majority of losses, 58.3 per cent of total losses, while accounting for only 26.2 per cent of the economy over this period (Table 2-1).

Table 2-1 Corporate losses by sector, 2000 to 2020

	% of losses	% of GDP
Mining, quarrying, and oil and gas extraction	16.0%	6.7%
Management of companies and enterprises	14.4%	0.6%
Finance and insurance	14.3%	6.5%
Manufacturing	13.6%	12.4%
Other	41.7%	73.8%

Sources: Canada Revenue Agency, Statistics Canada and Office of the Parliamentary Budget Officer.

Note: Per cent of losses were calculated based on total net operating and capital losses.

3. Loss carrybacks

Over the 2000-2020 period, corporations carried back for income tax purposes, on average, 17.7 per cent of their net operating losses to the three previous tax years.[7] This corresponds to an average loss carryback of $13.1 billion per year. For capital losses, firms carried back 11.8 per cent of their losses to the three previous tax years, which corresponds to an average loss carryback of $2.3 billion (Figure 3-1).

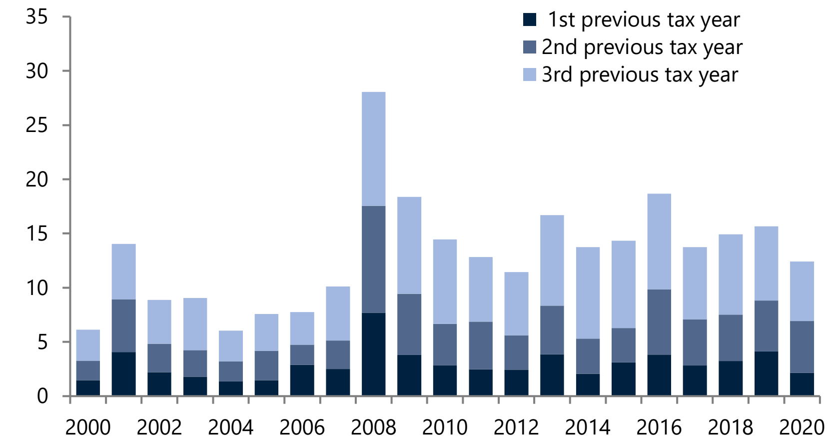
We estimate that, in total, net operating and capital loss carrybacks resulted in average CIT reductions to firms of $2.7 billion annually, representing 7.2 per cent of corporate income tax revenue.[8]

During economic downturns, corporations increased their utilization of losses as their need for cash increased and access to liquidity was constrained. During the last three downturns (the dotcom bubble, the global financial crisis, and the COVID-19 pandemic), the share of net operating losses carried back spiked well above its 2000-2020 average of 17.7 per cent.[9]

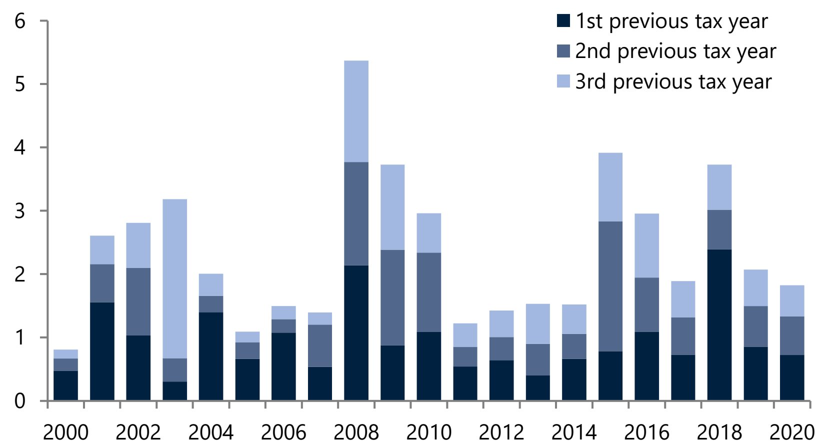
In 2008, we estimate that this resulted in a loss carryback CIT refund of $6.8 billion—a $4.4 billion increase compared to 2007, representing 14.2 per cent of corporate income tax in 2008.[10] For fiscal planning purposes, the potential amount of refunds during periods of economic downturns stresses the importance of considering how many losses could be generated and their associated carryback CIT refund.[11]

Figure 3-1 Corporate losses carried back

Net operating losses carried back ($ billions)



Capital losses carried back ($ billions)



Sources: Canada Revenue Agency, Statistics Canada and Office of the Parliamentary Budget Officer.

Note: Data are in business years. For example, 2019 corresponds to a corporation's fiscal year ending between April 1, 2019 and March 31, 2020.

Values for 2020 are prorated for incomplete data.

Analysis by sector

In general, sectors that accounted for the largest share of total losses also carried back the largest amount of losses and received the largest carryback refund. For example, firms in the Finance and insurance sector carried back the largest average annual amount of losses ($3.2 billion) and received the largest average yearly estimated carryback refund of $610.9 million.[12] On average, they carried back 24.7 per cent of their losses (Table 3-1).

An exception to this is the construction sector, which generated only 5.2 per cent of losses, yet it carried back a relatively large share of these (23.9 per cent or $1.1 billion), receiving on average $178.4 million in estimated yearly refunds.

In total, these 5 sectors, on average, carried back $10.2 billion of losses and received $1.8 billion in yearly carryback refunds, representing more than 65 percent of the total carryback refunds. While firms in all the remaining sectors collectively carried back, on average, $5.2 billion of losses (or less than $1.0 billion individually) and received total estimated refunds of $915.2 million.

Table 3-1 Largest average annual loss carrybacks, by sector, 2000 to 2020

	Average losses carried back	Average yearly refunds	Share of total losses	% of losses carried back
Finance and insurance	$3.2 billion	$610.9 million	14.3%	24.7%
Manufacturing	$2.8 billion	$440.2 million	13.6%	22.4%
Mining, quarrying, and oil and gas extraction	$1.6 billion	$271.7 million	16.0%	10.7%
Management of companies and enterprises	$1.5 billion	$253.1 million	14.4%	11.4%
Construction	$1.1 billion	$178.4 million	5.2%	23.9%
All other sectors*	$5.2 billion	$915.2 million	36.5%	15.5%

Sources: Canada Revenue Agency, Statistics Canada and Office of the Parliamentary Budget Officer.

Note: Shares of total losses were calculated based on total net operating and capital losses.

* Average losses carried back and average yearly refunds for all other sectors represent their combined total. Per cent of losses carried back is calculated as a percentage of total losses and represents the sectors' average.

As noted previously, during economic downturns firms increase their utilization of losses. In fact, almost two thirds of the sectors analysed increased their losses carried back during these periods.[13] For example, firms in the Finance and insurance sector carried back 87.5 per cent of their net operating losses in 2008, compared with 28.9 per cent on average, and 50.6 per cent of their capital losses in 2003, compared with 15.8 per cent on average.

4. Loss carryforwards

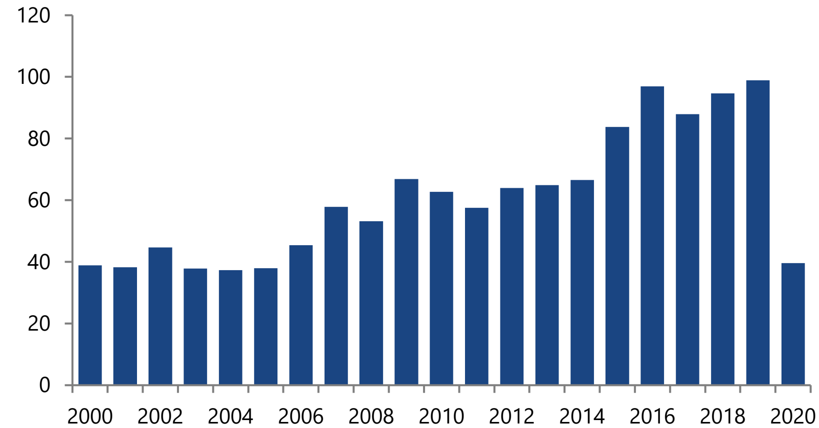
Over 2000 to 2020, corporations carried forward for income tax purposes, on average, 82.2 per cent of their net operating losses.[14] On average, this corresponds to $60.9 billion of losses annually that were carried forward (Figure 4-1). Of these, 44.8 per cent were later used as carryforward deductions,[15] 37.1 per cent remain to be used and 18.1 per cent were never used.

Firms carried forward 88.2 per cent of their capital losses, which, on average, correspond to $17.6 billion in annual loss carryforwards. Of these, 31.0 per cent were used as carryforward deductions, 35.3 per cent remain to be used and 33.7 per cent were never used.

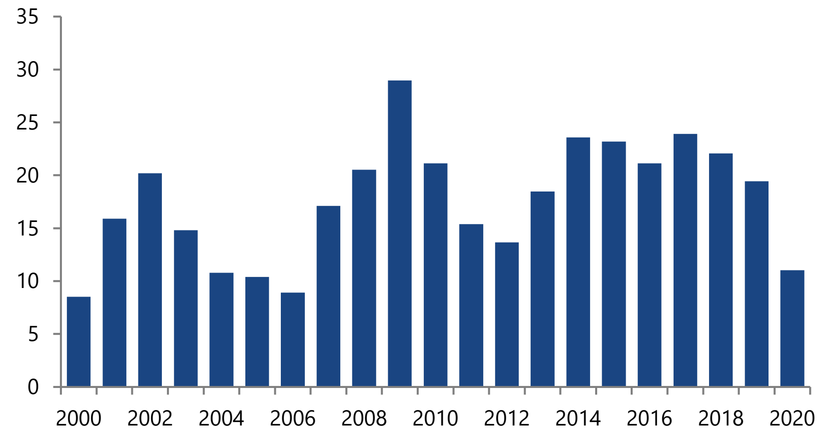
The first subsection below provides estimates of the amount of loss carryforward deductions and the number of years it takes firms to use them. The second subsection provides estimates of the amount of the unutilized loss carryforwards in a given year.

Figure 4-1 Corporate losses carried forward

Net operating losses carried forward ($ billions)



Capital losses carried forward ($ billions)



Sources: Canada Revenue Agency, Statistics Canada and Office of the Parliamentary Budget Officer.

Note: Data are in business years. For example, 2019 corresponds to a corporation's fiscal year ending between April 1, 2019 and March 31, 2020.

Values for 2020 are prorated for incomplete data.

4.1 Loss carryforward deductions

Over 2000 to 2019, in total, net operating and capital loss carryforwards increased from $20.8 billion to $46.8 billion, or by 4.4 per cent per year, on average (Figure 4-2).

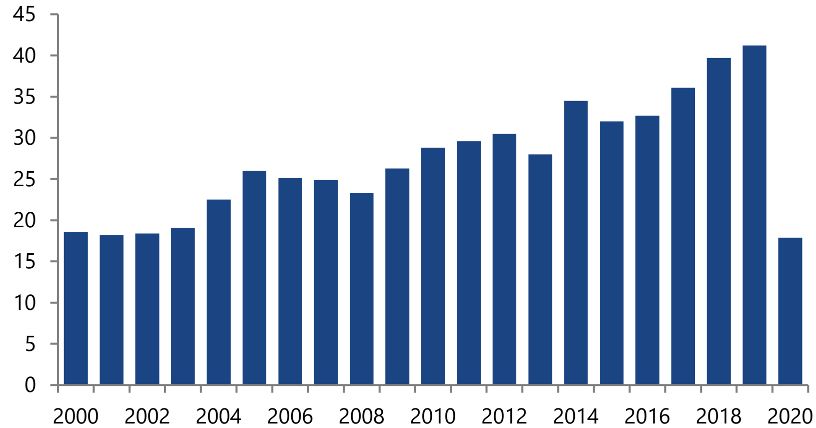
Corporations deducted $27.3 billion (or 44.8 per cent) annually, on average, of their net operating losses carried forward, and $5.5 billion (or 31.0 per cent) of their capital losses carried forward. On average, this corresponds to $32.8 billion in total tax deductions per year, reducing corporate income tax revenues by $5.3 billion (or 14.4 per cent).[16]

Net operating loss carryforward deductions show an upward trend that moderates during economic downturns. On average, net operating loss carryforward deductions declined by 6.6 per cent during the dotcom bubble, global financial crisis and the 2015-2016 oil price shock. Capital loss carryforward deductions are more volatile and decreased, on average, by 36.9 per cent during the same periods. This reflects the contraction of a firm’s income during downturns, which constrains the utilization of loss carryforward deductions.

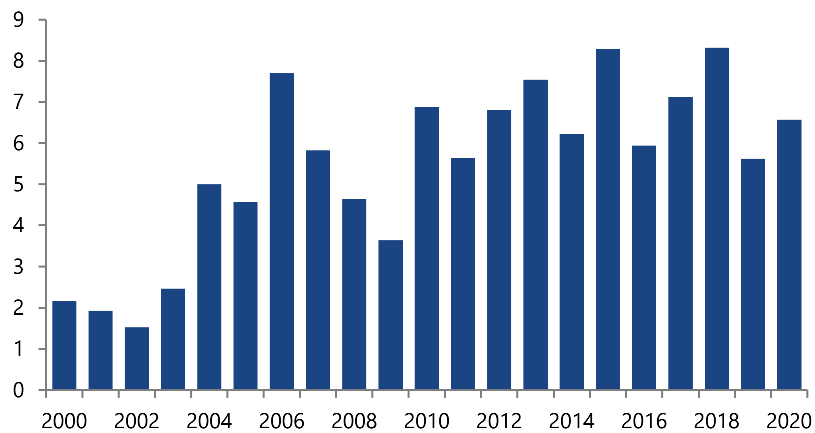
We estimate that loss carryback refunds and loss carryforward deductions combined reduced the Government’s corporate income tax revenue by $8 billion annually, on average, over 2000 to 2020 (or 21.6 per cent per year). There is, however, significant variation over this period. For example, in 2008, we estimate that loss carryback refunds and loss carryforward deductions reduced the Government’s corporate income tax revenue by $6.8 billion and $4.9 billion, respectively, collectively reducing corporate income tax by 37.4 per cent.

Figure 4-2 Loss carryforward deductions

Net operating loss carryforward deductions ($ billions)



Capital loss carryforward deductions ($ billions)



Sources: Canada Revenue Agency, Statistics Canada and Office of the Parliamentary Budget Officer.

Note: Data are in business years. For example, 2019 corresponds to a corporation's fiscal year ending between April 1, 2019 and March 31, 2020. Values for 2020 are prorated for incomplete data.

Analysis by sector

Similarly, to losses carried back, the sectors that accounted for the largest share of total losses also, on average, used the largest amount of loss carryforward deductions and benefited from the largest amount of tax saving. For example, firms in the Finance and insurance sector deducted the largest average annual amount of loss carryforwards ($5.2 billion) and benefited from the largest amount of tax saving, $979.4 million per year. On average, they deducted 52.1 per cent of their loss carryforwards (table 4.1).

An exception to this is the Information and cultural industries sector, which generated only 5.1 per cent of losses, yet it deducted a relatively large share of these (63.6 per cent or $2.6 billion), benefiting from an average annual tax saving of $400.9 million.

In total, these 5 sectors, on average, deducted $20.7 billion of loss carryforwards and saved $3.5 billion in CIT per year, representing more than 66 percent of total loss carryforward deductions. Firms in all the remaining sectors collectively deducted, on average, $12.1 billion of loss carryforwards (or less than $2.0 billion individually) and saved 1.8 billion in CIT.

Table 4-1 Largest average annual loss carryforward deductions, by sector, 2000 to 2020

	Average loss carryforward deductions	Average yearly tax savings	Share of total losses	% of loss carryforwards deducted
Finance and insurance	$5.2 billion	$979.4 million	14.3%	52.1%
Manufacturing	$4.7 billion	$750.1 million	13.6%	49.0%
Management of companies and enterprises	$4.3 billion	$721.6 million	14.4%	36.4%
Mining, quarrying, and oil and gas extraction	$3.9 billion	$679.8 million	16.0%	29.8%
Information and cultural industries	$2.6 billion	$400.9 million	5.1%	63.6%
All other sectors*	$12.1 billion	$1,778.1 million	36.6%	42.7%

Sources: Canada Revenue Agency, Statistics Canada and Office of the Parliamentary Budget Officer.

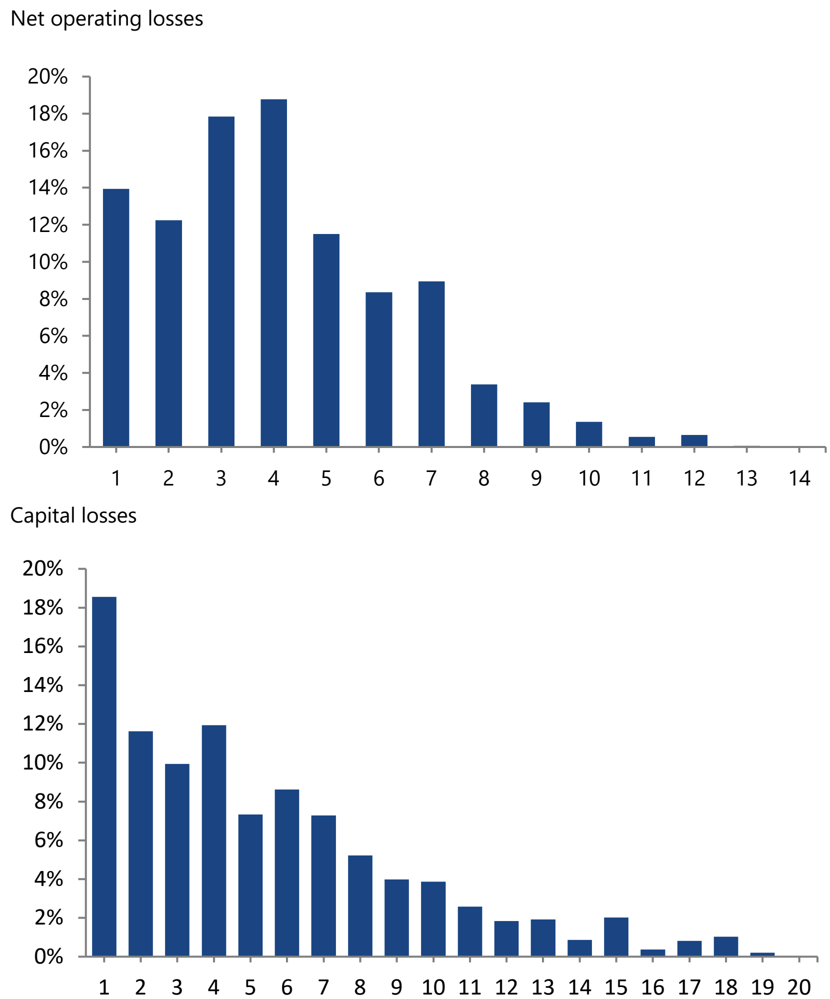
Note: Shares of total losses were calculated based on total net operating and capital losses.

* Average losses carried forward and average yearly tax savings for all other sectors represent their combined total. Per cent of loss carryforwards deducted is calculated as a percentage of total loss carryforwards and represents the sector's average.

Average number of years it takes to use loss carryforward deductions

Of the corporate losses that were carried forward and deducted over 2000 to 2020, we estimate that firms took, on average, 4.2 years to deduct their carried forward net operating losses and 5.4 years to deduct their carried forward capital losses (Figure 4-3).

Figure 4-3 Distribution of loss carryforward deductions, years after being incurred



Sources: Canada Revenue Agency, Statistics Canada and Office of the Parliamentary Budget Officer.

However, this duration varies across sectors and depends on the size of losses that firms incur.

Unsurprisingly, we find that firms that incurred smaller losses over 2000-2020 utilized them more quickly, while those that incurred larger losses, generally, took more time.[17] For example, for net operating losses, firms in the Health care and social assistance, Utilities, and Arts sectors, which each incurred less than 2 per cent of total losses, were able to utilize them in 3.2 years, on average (Table 4-2). Firms in the Manufacturing, Mining, and Management sectors, which collectively generated more than 40 per cent of losses, however, required an additional 1.5 years, on average, to utilize their losses.

Similarly, for capital losses, firms in the Health care and social assistance, and Administrative services sectors, which each incurred less than 2 per cent of total losses, were able to utilize them in 3.3 years, on average. However, firms in the Manufacturing and Finance sectors, which incurred 10.4 per cent and 21.9 per cent of losses, respectively, required almost double the amount of time to utilize their losses.

Firms in the Finance and insurance sectors appear to be more strategic in utilizing their losses. While firms in these sectors incurred around 12 per cent of total net operating losses generated over 2000-2020, they succeeded in utilizing these losses relatively more quickly than firms in sectors that either had smaller or similar-sized losses.

Firms in most sectors utilized their net operating losses more quickly than their capital losses. On average, within 7 years, 90 per cent of net operating losses carried forward were utilized, while it took 11 years to utilize capital losses.

Table 4-2

Utilization of loss carryforward deductions in selected sectors, 2000 to 2020

	Average number of years		% of total losses	
	Net operating	Capital	Net operating	Capital
Arts	2.8	4.0	0.9	0.3
Utilities	3.2	4.6	1.6	0.5
Finance	3.6	6.6	12.2	21.9
Health care and social assistance	3.7	3.6	0.8	1.0
Administrative services	4.1	3.1	2.1	1.9
Manufacturing	4.3	6.3	14.4	10.4
Mining	4.7	5.0	16.0	16.2
Management	5.1	4.8	11.0	26.9
All other*	4.0	4.9	3.7	1.9

Sources: Canada Revenue Agency, Statistics Canada and Office of the Parliamentary Budget Officer.

Note: * The percentage of losses carried forward for all other sectors represents an average. Public administration and retail trade sectors are excluded from this average for data confidentiality reasons.

4.2 Unutilized loss carryforwards in a given year

In any given year there are loss carryforwards that firms cannot utilize and become "lost". Potential reasons include (but are not limited to): losses expiring, businesses dissolving, losses written-off following the elimination of the branch of activities that generated them. In the case of capital losses, the losses carried forward will also be lost when the business is sold (capital losses do not expire).[18]

Over the 2000-2020 period, we find that, on average, $11.0 billion or 18.1 per cent of net operating loss carryforwards and $5.9 billion or 33.7 per cent of capital loss carryforwards were lost each year.

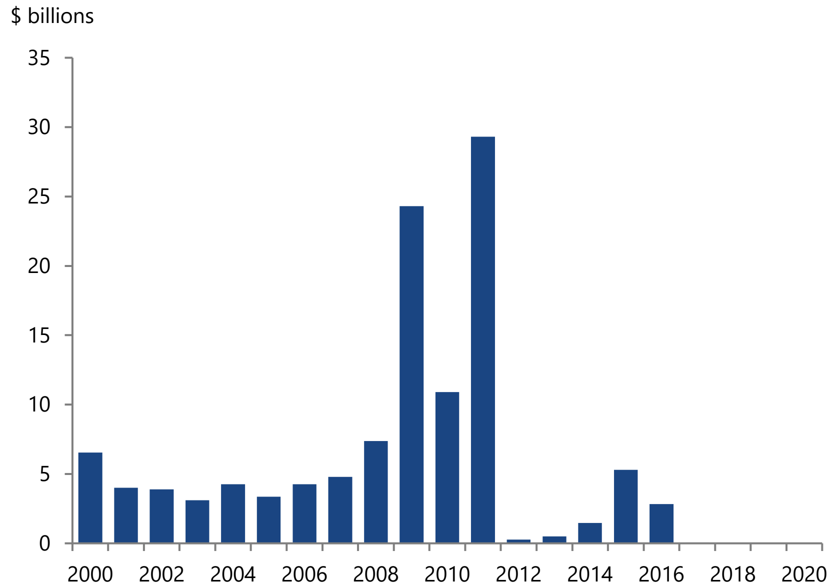
In terms of expiring losses, our analysis shows that over 2000 to 2011, 77,000 businesses had $8.8 billion of their net operating losses expire annually, on average, resulting in a total of $106.1 billion in expired net operating losses for the period as a whole.

We find that the value of net operating losses expiring in a given year depends on the economic cycle, as well as on existing and announced upcoming legislative changes.

Over the full sample 2000 to 2020, the largest value of expired losses occurred in 2009 ($24.3 billion) and 2011 ($29.3 billion), due to the compounding effects of the dotcom bubble and the global financial crisis (Figure 4-4). During the dotcom bubble (2001-2003), many tech firms had incurred large losses that they were not able to fully deduct. Thus, they carried forward a large proportion of these losses over the next 7 years until they finally expired between 2009 to 2011.[19] Additionally, the global financial crisis in 2008-2009 reduced firms' incomes and increased their losses, further hindering their ability to use prior years' loss carryforwards before their expiration.

After 2012, the value of losses expiring was either close to zero or zero due to two legislative changes to the maximum number of years that net operating losses could be carried forward. The maximum number of years over which net operating losses generated in 2004 and 2005 could be carried forward was increased from 7 to 10 years in 2004, and then to 20 years in 2006. As such, net operating losses generated in 2006 or later will only expire starting from 2026 onward.

Figure 4-4 Expiring net operating loss carryforwards by year of expiry



Sources: Canada Revenue Agency, Statistics Canada and Office of the Parliamentary Budget Officer.

Note: Data are in business years. For example, 2019 corresponds to a corporation's fiscal year ending between April 1, 2019 and March 31, 2020.

5. The stock of loss carryforwards

In a given year, as corporations incur net operating and capital losses and decide to carry a portion of these losses forward, the overall stock of loss carryforwards will increase over time, all else equal. The increase in the stock of loss carryforwards in the economy, however, will be limited somewhat as firms utilize some of these losses as deductions and as a portion of these losses are “lost” (for example, due to expiry).

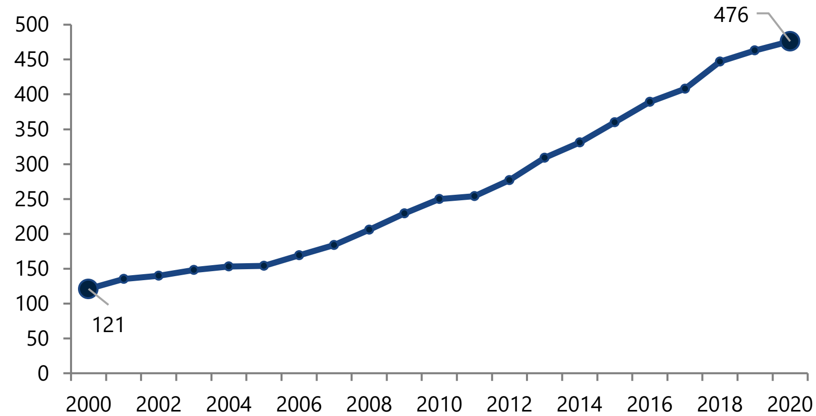
From a fiscal planning perspective, the stock of loss carryforwards represents a fiscal risk, since profitable corporations may utilize some, or all, of their accumulated loss carryforwards to reduce their corporate income taxes payable in that year.

Both the stock of net operating and capital loss carryforwards increased steadily over 2000-2020, growing by about 7.1 per cent annually, on average (Figure 5-1). Most firms (92 per cent) carried losses forward because they were not able to generate sufficient taxable income to utilize them. Starting from 2026, we expect the stock of losses to grow at a slower rate as some of the losses incurred in 2006 and later will start to expire.

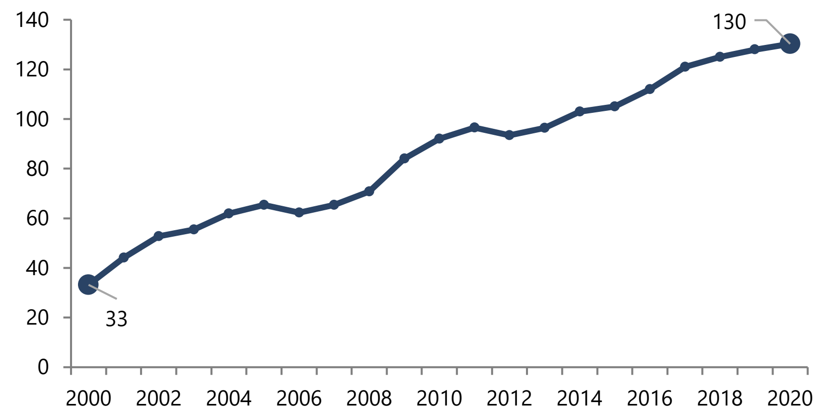
During economic downturns, the stock of capital losses increased faster than that of net operating losses, increasing by 23.7 per cent and 11.6 per cent, on average, respectively. This could potentially reflect liquidation of assets following the downsizing or closure of businesses resulting from economic downturns.

Figure 5-1 Stocks of net operating and capital loss carryforwards

Net operating losses ($ billions)



Capital losses ($ billions)



Sources: Canada Revenue Agency, Statistics Canada and Office of the Parliamentary Budget Officer.

Note: Data are in business years. For example, 2019 corresponds to a corporation's fiscal year ending between April 1, 2019 and March 31, 2020.

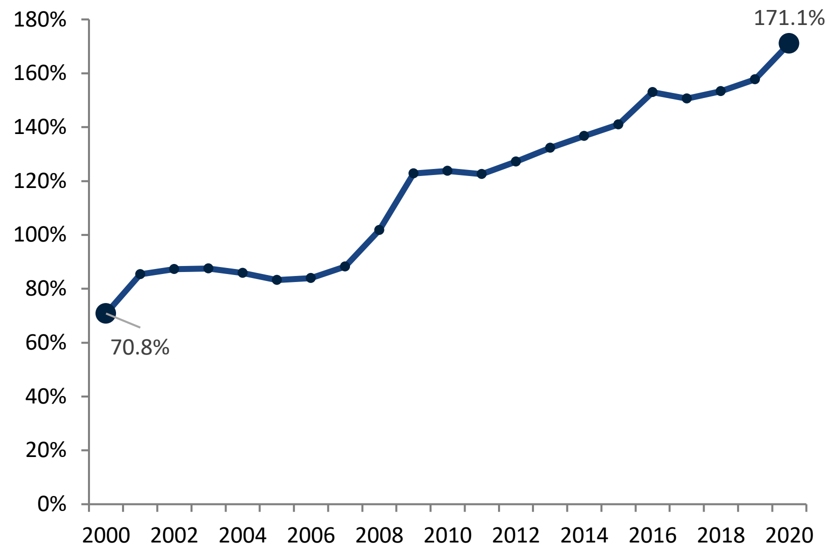
To provide an indicator of fiscal risk to CIT revenues, we compare the stock of loss carryforwards to the Government's revenues in a given year.

The combined stock of net operating and capital loss carryforwards as a ratio of federal revenues increased from 70.8 per cent in 2000 to 171.7 per cent in 2020 (Figure 5-2).[20]

Based on past experience, $12.3 billion of the current stock of unused losses could be further used as carryforward deductions in a given year— annually lowering corporate income tax revenues by an additional $1.7 billion, which represents 2.1 per cent of our October 2022 CIT revenue projection.[21]

Given the magnitude of the stock of loss carryforwards, if more firms generated sufficient taxable income than in the past, carryforward deductions would be larger, reducing the Government's tax base and corporate income tax revenues.

Figure 5-2 Combined stock of net operating and capital loss carryforwards, per cent of federal revenues



Sources: Canada Revenue Agency, Statistics Canada and Office of the Parliamentary Budget Officer.

Note: These shares were calculated based on the total amounts of net operating and capital losses.

A review of the composition of the stock of loss carryforwards shows that firms carrying forward larger stock of losses are those that have incurred higher amounts of losses during 2000-2020. Firms in the Finance, Mining, Manufacturing and Management of companies sectors generated collectively more than 55 per cent of the total stock of net operating and capital loss carryforwards. Three of these four sectors (the exception being Finance) are also those that take the longest to deduct their loss carryforwards and are therefore less likely to respond to changes in tax incentives.[22]

Firms carrying forward smaller losses, such as those in the Health care and social assistance, Utilities and Arts sectors (each representing less than 2 per cent of the total stock of loss carryforwards) utilize their loss carryforwards more quickly and are therefore more likely to react to changes in tax incentives.

Appendix A – Data and methodology

For this analysis, we used administrative data from the Canada Revenue Agency (CRA) obtained through the Canadian Centre for Data Development and Economic Research (CDER) at Statistics Canada. We focus, in particular, on data provided by Schedule 4 and Schedule 200 of the T2 Corporation Income Tax Return.

We defined several variables to analyse the utilization of losses (loss carryback and loss carryforward rules) by corporations and their distribution over time and across sectors. We then assessed the evolution of the stock of losses carried forward. A description of the variables and the methodology used in their calculation is provided in subsection A.1 below.

We also used a longitudinal analysis at the firm level, assuming a first in, first out (FIFO) utilization of the stock of losses to estimate the number of years taken by a firm to use the losses generated[23] in any given year, carried forward and deducted. We then derived the distribution of the utilization of these losses.

A.1 The utilization of corporate losses

The share of losses carried back in a year is calculated by dividing the amount of losses carried back by the amount of losses generated during the year (line 110 of Schedule 4 of T2 for net operating losses and the sum of lines 210 and 220 for capital losses).

The amount of net operating losses carried back were calculated by adding the amounts of losses in lines 901 and 911, 902 and 912, and 903 and 913 of Schedule 4 of T2.

The amount of capital losses carried back are calculated by adding lines 951, 952 and 953 of Schedule 4 of T2.

The amount of net-operating loss carryforward deductions was obtained by adding up the amounts of losses in lines 130 and 135 of Schedule 4 of T2[24]. The amount of capital loss carryforward deductions corresponds to line 225 of Schedule 4 of T2.

The amount of net operating and capital losses carried forward in a given year were obtained by deducting the amount of losses carried back and the loss carryforward deductions from the total amount of losses generated during the year.

The amount of net operating losses expiring in a given year corresponds to line 102 of Schedule 4 of T2.

A.2 Number of years to use loss carryforwards

To estimate the number of years it took a firm to use its net operating and capital losses generated in a given year and carried forward, we tracked corporate losses utilization since 2000, the first year for which we have data in our database.

We used a longitudinal analysis at the firm level, assuming a first in, first out (FIFO) utilization of the firm's inventory of losses. The stock of losses at the beginning of any tax year is equal to the amount of unused losses that firms carry forward into the tax year. If a firm reports a stock of losses carried into tax year 2000, we ensure that the firm exhausts those losses prior to the utilization of any new losses generated in tax year 2000 or later. Once the firm exhausts its pre-2000 stock of losses, we started tracking the utilization of new losses to calculate the number of years it took the firm to use them.

The stock of net operating and capital losses carried forward each year was calculated by adding new reported losses and deducting losses carried back to claim refunds and loss carryforward deductions from the original stock of losses reported by the taxpayer, taking into account any necessary adjustment.[25]

The amount of net operating losses reported in a given year was obtained by adding up the amounts of losses reported in line 110 and line 105 of Schedule 4 of T2. The total amount of capital losses reported in a given year was obtained by adding up the amount of losses reported in lines 210, 220 and 205 of Schedule 4 of T2.

Our database is composed of approximately 3.3 million firms that incurred net operating losses and 532,000 firms that incurred capital losses over the 2000 to 2020 period. To estimate the average duration taken by firms to use their losses carried forward, we removed those that never used their losses and focused on the remaining firms. Given the large number of firms that incurred net operating losses and to save on computational time, we drew randomly a sample composed of a comparable size of firms to our sample of firms with capital loss carryforward deductions. Then, we computed the duration taken by firms. Our sample of firms with net operating losses consists of approximately 356,000 firms and that of firms with capital losses consists of 335,000.

An analysis of the composition of our sample of firms with net operating losses shows that it matches that of the actual distribution of firms both in terms of size and sectors.

Notes

1 Other reasons why corporate income taxes are difficult to project include: corporate incomes are more volatile than those of households, the relationship between inflation and real taxable income is unpredictable due to the complex effects of the costs of withdrawals from inventory, depreciation allowances and interest income and expenses, and investment incentives can cause taxable income to fall below expectations in the short run and then rise above them in the longer run. In addition, corporations may merge, consolidate, or use pricing strategies (including international transfer pricing) that can affect their taxable income (Allen, R., R. Hemming., and B.H. Potter (2013), "Managing Government Revenues", *The International Handbook of Public Financial Management*, p. 448).

2 We found that during an economic downturn, carryback refunds increase and the stock of losses carried forward accelerates. This exerts an immediate negative impact on the Government's revenues in the short run and weighs on its revenues in the long run, as the stock of losses carried forward increases over time.

3 For example, understanding tax loss utilization could assist in costing the impacts of various tax incentives, such as accelerated depreciation. Firms in sectors with a large stock of loss carryforwards will be less responsive to accelerated depreciation incentives because this will only increase their already large stock of losses (which would expire after 20 years) and not provide any tangible tax benefit). Therefore, they may prefer to wait until exhausting all these stocks before using their capital cost deductions.

4 Over 2000 to 2020, more than 3.5 million corporations incurred losses related to one of the six following categories: net operating losses, capital losses, farm losses, restricted farm losses, listed personal property losses and limited partnership losses. Net operating and capital losses represent more than 95 per cent of total losses, excluding limited partnership losses. The amount of limited partnership losses is small, however, we do not have information on these losses.

5 Prior to March 2004, net operating losses could be carried forward for 7 years. Over March 2004 to March 2006, net operating losses could be carried forward for 10 years. For additional details, see: https://www.canada.ca/en/revenue-agency/services/tax/individuals/topics/about-your-tax-return/tax-return/completing-a-tax-return/deductions-credits-expenses/line-25200-non-capital-losses-other-years.html

6 We only have partial data for 2020. We estimate that half of all corporations filed their return at the time of compiling our database. In total, at that point in time, net operating and capital losses were $31.3 billion.

7 Most of which were carried back to the third year.

8 The impact on CIT revenue is equal to the amount of the loss (carryback or carryforward) multiplied by the effective CIT rate. We are using the annual average effective tax rate over 2000-2020 to calculate the tax implications of the loss carrybacks and the loss carryforward deductions. The effective corporate tax rate decreased from 22.1 per cent in 2000 to 13.5 per cent in 2020.

9 Utilization of loss carrybacks increased from 12.8 per cent in 2000 to 23.5 per cent in 2001, from 13.3 per cent in 2007 to 31.1 per cent in 2008 and from 13.0 per cent in 2019 to 21.8 percent in 2020. Based on preliminary data in 2020. Although firms generated significantly lower losses than in previous years, the proportion of those losses carried back still increased.

10 In 2008, net operating losses carried back were $28.1 billion and capital losses carried back were $5.4 billion.

11 While the proportion of carryback refunds increased in 2020, losses and the amount of carryback refunds were small, especially compared with the global financial crisis.

12 The Finance sector is among the most profitable sectors even it has a higher level of losses because it also has a higher level of profit.

13 The public administration sector was removed from the sector-by-sector analysis for data confidentiality reasons.

14 Current year non-capital losses applied against current-year taxable dividends subject to Part IV tax was, on average, equal to 0.1 per cent of the total amount of losses (or less than $0.1 billion).

15 A loss carryforward deduction is the losses carried forward that corporations report on their tax return as a deduction against current year income. Loss deductions are claimed after the computation of net income and can be claimed until any positive net income is eliminated.

16 See note 8.

17 An exception is firms in the Finance and insurance sectors. While they incurred around 12 per cent of total net operating losses generated over 2000-2020, they succeeded in utilizing them relatively more quickly than firms in sectors who either had smaller or similar losses.

18 For more details, see paragraph 111(4)(a) and paragraph 111(4)(b) of the Income Tax Act.

19 The number of businesses that had losses expire during this period, 82,000 in 2009, 87,000 in 2010 and 83,000 in 2011.

20 Only 50 per cent of capital losses are considered in the combined amount of losses, as only 50 per cent of capital gains are taxable and therefore only 50 per cent is refundable.

21 Estimated using the current effective tax rate.

22 See note 3.

23 This includes losses generated by the firm or transferred on an amalgamation or on the wind-up of a subsidiary corporation.

[24] The amount of the previous years non-capital losses applied against current-year income represents, on average, more than 99 per cent of the total amount of losses on lines 130 and 135.

[25] This includes adjustments specified on lines 140 and 150 of the tax return for non-capital losses and those specified on lines 240 and 250 of the tax return for capital losses.