

# An International Comparison of Capital Expenditures

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## SUMMARY

- Capital investment contributes to economic growth and higher standards of living through its link to increased labour productivity and technological change.
- The growth rate of overall capital expenditures in Canada slowed substantially from 2005 to 2019. Furthermore, from 2015 to 2019, the growth rate was lower than in virtually any other period since 1970.
- As recently as 2000 to 2010, overall capital investment in Canada enjoyed a substantially higher growth rate than in other developed countries, but from 2010 to 2019, Canada's investment growth rate dropped substantially below that of the United States and many other developed countries.
- Further, corporate investment in Canada as a share of total investment was the lowest

among a set of developed countries from 2005 to 2019.

- That relatively weak recent performance is mirrored in the lower shares of two key categories of business investment in Canada: machinery and equipment and intellectual property products. While the shares of these two asset categories in total investment was typically lower in Canada than in the US and several other developed countries for which data are available, the shares of these assets in total investment in Canada declined even more relative to the shares of those assets in total investment for the other OECD countries studied post-2010.
- This bulletin's international comparison supports concerns raised elsewhere about the future competitiveness and productivity performance of Canada's business sector compared to other developed countries. Against this background, improvements to the environment for business investment in Canada should be a priority for the federal and provincial governments.

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## Introduction

Capital investment, also known as capital deepening, is an important contributor to economic growth through the growth of labour productivity. Indeed, from 1980 to 2011, capital investment accounted for almost two-thirds of the average annual growth in labour productivity in Canada.<sup>1</sup> Since capital is a complementary input to labour, capital deepening directly increases the productivity of workers. Moreover, to the extent that capital investment is a vehicle for introducing new technology into the economy, primarily in the form of new and improved machinery and equipment, capital deepening also promotes a faster growth of total factor productivity, which represents the productivity of all conventional factors of production in an economy. The importance of capital investment to the growth of productivity and, hence, to improvements in standards of living, makes the recent behaviour of capital investment in Canada of particular concern. A previous study by Globerman and Press (2018) documents a decline in the growth of total fixed capital expenditures in Canada post-2014. While the decline is consistent with the slower growth of the Canadian economy, the slowdown in investment growth was particularly marked for two important business asset categories: machinery and equipment and intellectual property products.

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<sup>1</sup> The remainder of the increase in labour productivity was accounted for by an increase in the educational and skill levels of the domestic labour force. Over the same period, capital investment accounted for over one-third of the growth in average annual labour productivity in the United States. The second most important contributor was the growth in multi-factor productivity, which is primarily technological change. (See Baldwin, Gu, Macdonald, and Yan, 2014).

A number of other research contributions highlight a slowdown, and in some cases a decline, in private sector capital investment in Canada in recent years. Most notably, Cross (2017) evaluated business investment behaviour in Canada post-2000. He concluded that business investment in Canada has been low compared to other developed countries.<sup>2</sup> This is particularly true for the important category of machinery and equipment. Lamman and McIntyre (2018, March 5) report a consistent decline since 2014 in Statistics Canada's survey results on the investment intentions of Canadian private and public sector organizations. This survey asks some 25,000 organizations about how much they intend to invest in non-residential capital assets such as buildings and machinery and equipment. Reported investment intentions declined consistently from 2014 through 2018. Finally, Clemens and Veldhuis (2018, April 11, and 2018, April 13) refer to a growing chorus of business leaders who have stated that Canada has an investment crisis. They also offer data supporting the concern of business leaders that capital investment in Canada is collapsing. The data show not only declining domestic business investment adjusted for inflation since 2014, but also decreasing foreign direct investment in Canada.<sup>3</sup>

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<sup>2</sup> Canada's business investment performance improved somewhat between 2009 and 2014 because of higher energy prices, which boosted investment in the energy sector. However, business investment performance weakened substantially after 2014 when the energy sector no longer compensated for weakness in other industries (see Cross, 2017). For a short debate about the competitiveness of Canada's business sector, see the exchange between Mintz (2018, March 9) and Morneau (2018, March 9).

<sup>3</sup> Grubel (2018) also discusses the substantial recent decline in foreign direct investment in Canada.

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This bulletin evaluates capital expenditures over the past three to four decades in Canada in comparison to other countries, particularly the United States.<sup>4</sup> An examination of the behaviour of capital expenditures over time offers a perspective on whether recent experience differs markedly from the past. If so, it would support recent warnings to governments by business leaders in Canada that urgent attention should be paid to a deteriorating domestic capital investment environment. Comparing overall investment in Canada to other countries helps identify whether the Canadian experience reflects macroeconomic forces that broadly apply internationally or whether influences specific to the domestic economy seem more relevant. In the latter case, policy changes that specifically influence capital expenditures are more likely to influence investment behaviour than broader macroeconomic policies.

Our main finding is that the growth rate of overall gross fixed capital formation (GFCF) for Canada slowed substantially from 2005 to 2019. In particular, the growth rate from 2015 to 2019 was lower than in virtually any other period going back to 1970. The GFCF growth rate in Canada for 2010 to 2015 was also substantially below that of the United States and the OECD as a whole.<sup>5</sup> Although the disparity was not as pronounced as in the previous sub-period, the

growth of GFCF in Canada over the 2015 to 2019 sub-period was still below that of the US and the OECD as a whole. While there have been other periods when this has been true, Canada actually enjoyed a substantially higher growth rate of GFCF than other OECD countries (including the US) as recently as 2000 to 2010.

Also noteworthy is the smaller share of GFCF accounted for by corporate investment in Canada compared to several other wealthy comparator countries in recent years, particularly in asset categories that are critical contributors to improved productivity performance. The smaller share of corporate investment in Canada is offset by a significantly larger share of GFCF accounted for by residential housing.

This bulletin proceeds as follows. The next section presents and discusses data on total gross fixed capital formation in Canada compared to the United States and other OECD countries. The third section compares capital formation growth in each of the main sectors of the Canadian economy to that of several other OECD countries for which data are available. The bulletin then examines capital expenditures across major asset categories for Canada and several other OECD countries. It ends with conclusions and policy implications.

## Gross fixed capital formation in Canada

This section presents data on gross fixed capital formation in Canada over time and compares Canada's experience with that of other countries. The OECD defines gross fixed capital formation (GFCF), or investment, as the acquisition of produced assets (including purchases of second-hand assets), including the production of such assets by producers for their own use, minus disposals. The relevant assets relate to assets that are intended for use in the pro-

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<sup>4</sup> This bulletin is an update of an earlier evaluation of Canada's investment performance in an international context by Gliberman and Press (2018).

<sup>5</sup> Not all countries have data from 1970. The countries with partial data (and the year reporting starts) are: Czech Republic (1990); Hungary (1991); Poland (1990); Slovak Republic (1992); Chile (1986); Columbia (1975); Estonia (1993); Israel (1977); Slovenia (1990); Latvia (1995); Lithuania (1995). The sum of GFCF in these countries represented 6.6 percent of the OECD total in 2019.

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duction of other goods and services for a period of more than a year.<sup>6</sup>

Table 1 and figure 1 provide an overview of changes in gross fixed capital formation (GFCF) in Canada, the United States, and other OECD countries for sub-periods from 1970 to 2019.<sup>7</sup> Specifically, table 1 reports the percentage change in GFCF expenditures between the beginning and end years of each sub-period identified, where GFCF is measured in millions of current US dollars and where non-US currencies are converted to US dollars using Purchasing Power Parity exchange rates.<sup>8</sup> Canada, the United States, and the other OECD countries as a whole saw their fastest growth in GFCF during the 1970 to 1980 period. Between 1970 and 2010, Canada sometimes enjoyed faster rates of GFCF growth than the US and the OECD average, while at other times Canada exhibited slower rates of growth. Over the full range of sub-periods reported in table 1 covering the period 1970 to 2010, there is no basis for con-

<sup>6</sup> See OECD Data, *Investment (GFCF)*, <https://data.oecd.org/gdp/investment-gfcf.htm>. All data used in this report are from this OECD website unless otherwise indicated.

<sup>7</sup> There are some differences between the data reported in table 1 of this essay and the data on GFCF reported in Gliberman and Press (2018). This is particularly the case for the data reported for the OECD, since the country coverage for the OECD includes all OECD countries in each sub-period, whereas Gliberman and Press (2018) restricted their sample of OECD countries to the original set of OECD members. Notwithstanding, the conclusions drawn by Gliberman and Press (2018) from data through 2017 are fundamentally unchanged using a larger set of OECD countries as in this essay.

<sup>8</sup> The percentage change for each five-year period is calculated by taking the difference between the beginning and end year values and dividing by the beginning year value.

**Table 1: Change in Gross Fixed Capital Formation (GFCF)**

Years	Canada	US	OECD
1970-1975	89.9%	52.7%	57.5%
1975-1980	67.6%	93.3%	75.5%
1980-1985	27.7%	52.8%	37.9%
1985-1990	39.1%	23.5%	47.3%
1990-1995	3.8%	25.6%	17.0%
1995-2000	39.9%	48.9%	33.2%
2000-2005	44.8%	26.0%	22.8%
2005-2010	25.1%	-7.8%	7.6%
2010-2015	18.9%	35.1%	27.3%
2015-2019	11.6%	19.7%	19.6%

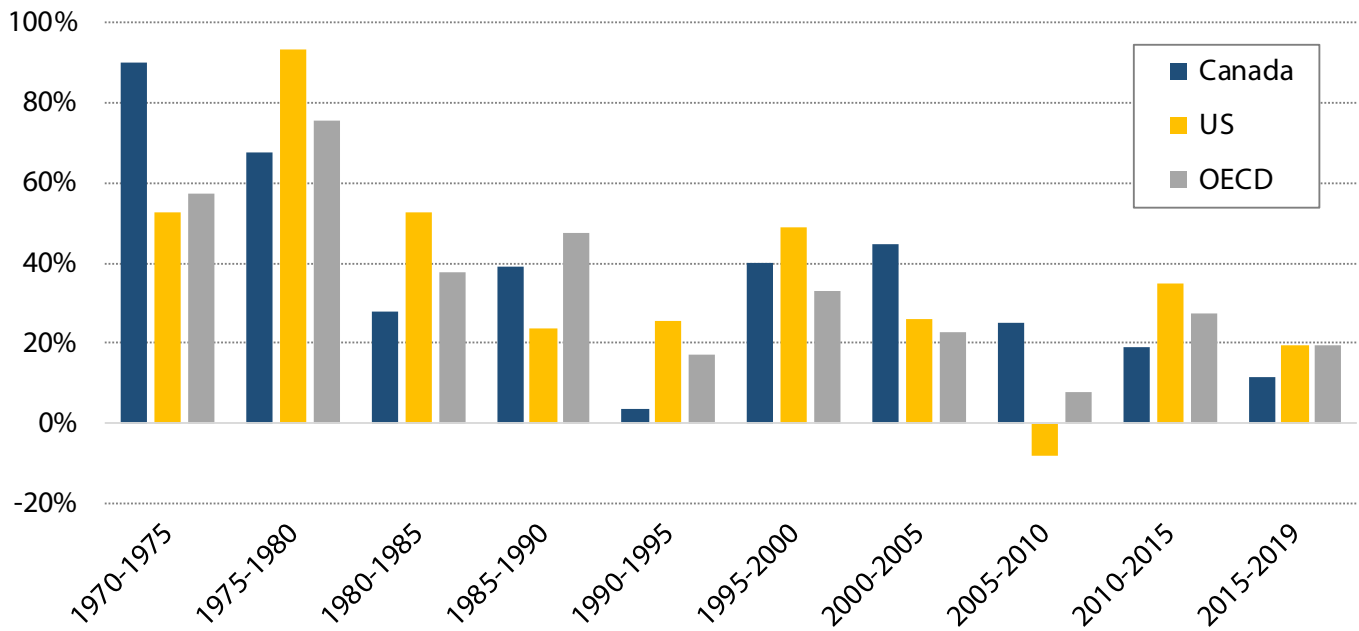
Source: OECD (2021a), *Investment (GFCF)* (indicator), <https://data.oecd.org/gdp/investment-gfcf.htm#indicator-chart>.

cluding that GFCF increased at a consistently slower rate in Canada than in other developed countries. However, from 2010 through 2019, GFCF in Canada increased at a slower rate than in the US. GFCF in Canada also increased at a slower rate than in other OECD countries from 2010 to 2019. This finding is consistent with evidence from other studies discussed in the introduction, which identify decreases in Canada's absolute (and relative) capital investment rates in recent years.

While various factors can influence capital expenditures including interest rates, tax rates, demography (including population growth and the age distribution of the population), and political and economic uncertainty, economic growth is certainly an important factor influ-

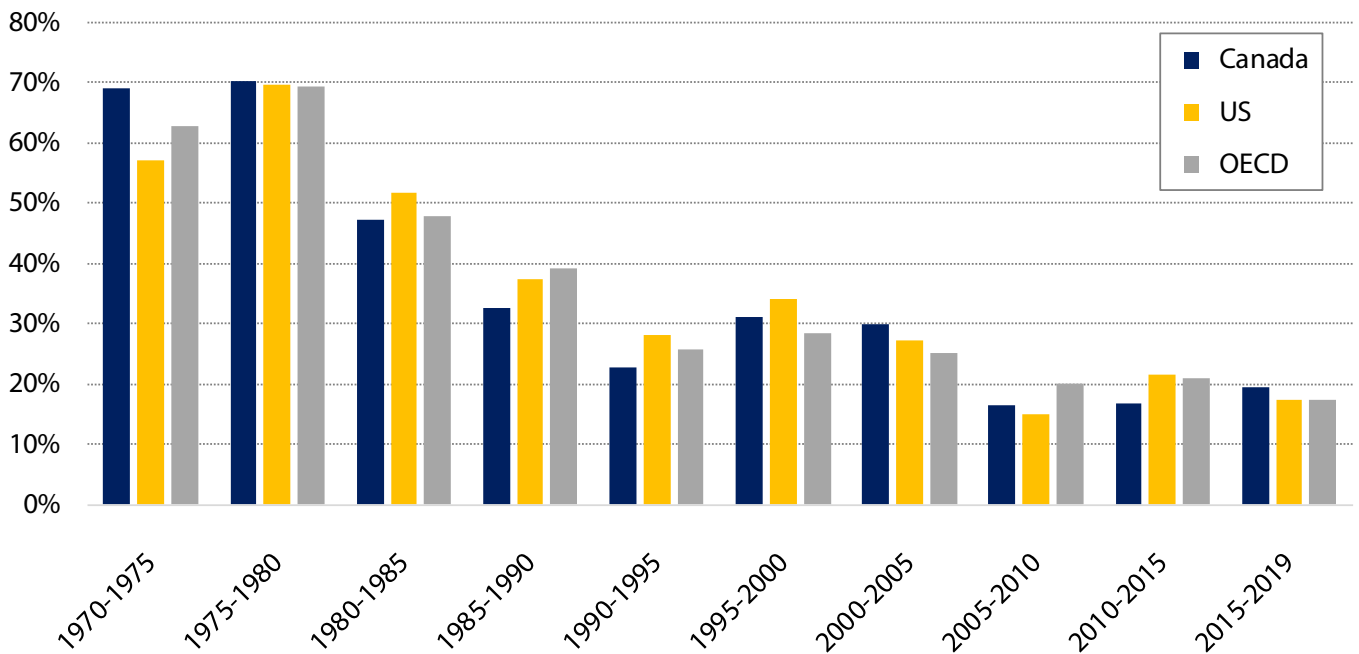
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Figure 1: Change in Gross Fixed Capital Formation (GFCF)



Source: OECD (2021a), *Investment (GFCF)* (indicator), <https://data.oecd.org/gdp/investment-gfcf.htm>.

Figure 2: Change in Gross Domestic Product (GDP)



Source: OECD (2021b), *Gross Domestic Product (GDP)* (indicator), <https://data.oecd.org/gdp/gross-domestic-product-gdp.htm#indicator-chart>.

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encing investment. Specifically, faster economic growth creates an increased demand for production capacity and therefore for capital investments. In this regard, it is possible that the slower rate of growth of GFCF in Canada compared to the US and other OECD countries in recent years reflects a slower rate of growth in gross domestic product (GDP) in Canada than elsewhere. Table 2 provides some perspective on this possibility. Specifically, table 2 reports the percentage change in GDP measured in millions of US dollars at current prices, where purchasing power equivalent (PPP) exchange rates are used to convert non-US dollar values into US dollar values.

One point regarding table 2: capital expenditures contribute to GDP, so slower rates of growth of GFCF can also contribute to (as well as be caused by) slower rates of GDP growth. A second point is that nominal GDP comparisons across countries might be misleading if inflation rates differ across the countries being compared. That is, differences in growth rates of real GDP across countries may not coincide with differences in growth rates of nominal GDP across those countries. However, to the extent that PPP exchange rates reflect differences in inflation rates across countries, the differences in GDP growth rates reported in table 2 may fairly accurately reflect differences in real GDP growth rates.

The data reported in table 2 show that GDP growth for the various sub-periods is similar for Canada, the US, and the OECD countries. In particular, while Canada's GFCF grew noticeably more slowly after 2010, Canada's GDP growth deficits to the US and the OECD are relatively small over the 2010 to 2019 period. Indeed, Canada's GDP growth from 2015 to 2019 exceeded that of the US and the OECD countries and was only modestly below the

**Table 2: Change in Gross Domestic Product (GDP)**

Years	Canada	US	OECD
1970-1975	69.1%	57.0%	62.6%
1975-1980	70.4%	69.6%	69.4%
1980-1985	47.2%	51.9%	47.9%
1985-1990	32.7%	37.4%	39.3%
1990-1995	22.8%	28.1%	25.7%
1995-2000	31.0%	34.2%	28.4%
2000-2005	30.0%	27.2%	25.2%
2005-2010	16.5%	15.0%	20.2%
2010-2015	16.9%	21.7%	20.8%
2015-2019	19.4%	17.5%	17.4%

Source: OECD (2021b), *Gross Domestic Product (GDP)* (indicator), <https://data.oecd.org/gdp/gross-domestic-product-gdp.htm#indicator-chart>.

latter two from 2010 to 2015. These observations suggest that Canada's slower rate of GFCF growth post-2010, particularly compared to the US, is unlikely to be primarily the result of a slower rate of growth of economic activity in Canada compared to the US or to the other OECD countries. Furthermore, the substantially greater variation in growth rates of GFCF across locations reported in table 1 compared to the variation in growth rates of GDP across locations reported in table 2 also suggests that Canada's relatively poor investment performance post-2010 is not primarily the result of slower economic growth in Canada.

## GFCF by sector

The primary concern about a recent slowdown in capital investment in Canada expressed in

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**Table 3: Corporate Investment as a Share of GFCF**

	Canada	US	Australia	France	Korea	Norway	Finland	Sweden
1981-1985	52.2%	50.6%	51.6%	46.6%	61.6%	58.9%	52.6%	62.5%
1986-1990	48.4%	46.9%	50.2%	49.9%	60.1%	58.5%	57.3%	69.7%
1991-1995	47.7%	50.1%	49.6%	51.6%	63.3%	60.3%	54.0%	65.4%
1996-2000	55.0%	53.0%	50.4%	53.3%	62.2%	62.7%	55.6%	70.4%
2001-2005	49.8%	46.8%	48.4%	53.5%	63.4%	57.6%	55.5%	69.2%
2006-2010	46.9%	50.0%	53.9%	53.4%	67.3%	60.2%	55.7%	68.2%
2011-2015	50.0%	55.0%	57.3%	56.1%	69.8%	57.4%	51.7%	69.1%
2015	48.5%	54.9%	50.5%	58.3%	67.8%	55.1%	53.4%	69.6%
2016	46.1%	53.4%	46.5%	58.7%	65.5%	53.8%	52.3%	68.1%
2017	45.4%	53.4%	47.7%	59.0%	65.6%	52.3%	52.7%	67.2%
2018	44.7%	54.0%	48.1%	59.3%	64.9%	52.4%	52.7%	67.2%
2019	46.6%	—	48.0%	59.2%	—	—	51.7%	67.1%

Source: OECD (2021c), *Investment by Sector* (indicator), <https://data.oecd.org/gdp/investment-by-sector.htm#indicator-chart>

studies briefly summarized in the introductory section of this bulletin focuses on private sector capital investment, specifically corporate investment. To the extent that corporate investment accounted for a smaller share of GFCF in Canada in recent years, the slower growth of GFCF in Canada post-2010 will understate the slowdown in corporate investment specifically. Furthermore, the relative performance of corporate investment growth in Canada compared to other countries will be worse than that implied by the overall GFCF series if Canada's share of corporate investment decreased relative to other countries in the past few years.

Table 3 provides some evidence on these latter possibilities. Specifically, table 3 reports average annual corporate investment as a percentage of total GFCF for Canada, the US, France, Korea, Norway, Finland, Sweden and Australia, respectively, for five-year periods from 1981 to 2015, as well as for the individual years 2015,

2016, 2017, 2018 and 2019. The data are reported for individual years from 2015 to 2019 because several of the countries in the sample did not report data for 2019.

The data in table 3 were estimated by calculating the average annual value of the share of corporate investment in GFCF for each of the periods shown. Unfortunately, data for the full set of OECD countries comprising the series reported in tables 1 and 2 are unavailable for corporate investment over any extended period. Hence, we do not report data for the OECD as a whole as in the table 1 and 2 comparisons.<sup>9</sup> Sufficient data from 1981 onward are only available for the countries identified above. Australia and Norway are, like Canada, relatively resource-intensive open economies. Hence, Australia and Norway make particularly relevant comparisons to Canada when evaluating

<sup>9</sup> Many of the excluded OECD countries started reporting sectoral shares of GFCF in 1995.

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**Table 4: Household Investment as a Share of GFCF**

	Canada	US	Australia	France	Korea	Norway	Finland	Sweden
1981-1985	30.1%	30.3%	34.8%	34.2%	18.2%	25.9%	31.3%	15.3%
1986-1990	35.3%	32.1%	37.2%	30.1%	24.1%	23.5%	27.0%	12.0%
1991-1995	33.8%	29.7%	36.9%	27.0%	21.0%	18.2%	25.6%	9.6%
1996-2000	30.5%	30.7%	37.7%	27.5%	21.0%	19.4%	26.1%	8.7%
2001-2005	34.6%	36.2%	40.7%	28.2%	19.1%	23.8%	27.9%	12.0%
2006-2010	35.4%	30.6%	33.2%	28.8%	15.0%	21.9%	28.9%	13.5%
2011-2015	33.6%	27.4%	30.3%	26.6%	14.4%	23.8%	30.3%	11.9%
2016	37.2%	30.8%	38.7%	25.9%	19.6%	25.6%	29.5%	13.8%
2017	37.5%	31.2%	36.9%	26.2%	20.4%	26.8%	29.6%	14.5%
2018	37.7%	30.8%	35.2%	25.9%	20.2%	25.8%	29.7%	13.5%
2019	36.4%	—	33.9%	25.3%	—	24.2%	29.5%	13.3%

Source: OECD (2021c), *Investment by Sector* (indicator), <https://data.oecd.org/gdp/investment-by-sector.htm#indicator-chart>.

corporate investment behavior relative to overall GFCF.

Table 3 shows that corporate investment as a share of GFCF has been consistently higher in Sweden and Korea than in the other countries over the entire sample period. Furthermore, for all of the sub-periods, the share of corporate investment was higher in Norway than in other countries save Sweden and Korea, although Norway's share was average for the post 2015 sub-period. What is noticeable from table 3 is that corporate investment in Canada as a share of GFCF is the lowest of all the sample countries from 2006 onward, although Canada's performance becomes more comparable to that of Australia in the most recent years. Prior to 2005, corporate investment as a share of GFCF in Canada was higher than in the US and Australia in the majority of the sub-periods and comparable to that of France. To be sure, a weakening of energy prices after 2014 explains

some of Canada's business investment performance in that period, as corporate investment as a share of GFCF also declined in Australia and Norway post-2015.<sup>10</sup> However, Canada's relatively poor corporate investment performance over the full period from 2010 to 2019, particularly compared to Australia and Norway, is unlikely to be exclusively due to the energy sector given that energy prices were higher in the earlier part of that period compared to the latter part, and that Australia and Norway are also relatively resource-intensive economies.

The recent relative decline in the business sector's share of GFCF in Canada should be matched by relative increases in the shares of GFCF contributed by households and/or governments. Tables 4 and 5 report similar data to that reported in table 3 for households and

<sup>10</sup> Di Matteo (2018) discusses the recent decline in business investment in Canada's energy sector.



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Table 5: Government Investment as a Share of GFCF

	Canada	US	Australia	France	Korea	Norway	Finland	Sweden
1981-85	17.7%	19.1%	13.6%	19.2%	20.2%	15.2%	16.1%	22.3%
1986-90	16.3%	20.9%	12.6%	20.0%	15.8%	18.0%	15.7%	18.3%
1991-95	18.5%	20.1%	13.4%	21.4%	15.7%	21.5%	20.5%	25.0%
1996-2000	14.6%	16.3%	11.9%	19.2%	16.8%	17.9%	18.3%	20.8%
2001-2005	15.8%	17.0%	10.9%	18.3%	17.5%	18.7%	16.6%	18.7%
2006-2010	17.7%	19.3%	12.9%	17.9%	17.7%	18.0%	15.4%	18.3%
2011-2015	16.1%	17.5%	12.4%	17.3%	15.8%	18.8%	18.0%	19.0%
2016	16.7%	15.8%	14.8%	15.4%	14.9%	21.2%	18.2%	18.1%
2017	17.1%	15.4%	15.4%	14.8%	14.0%	21.5%	17.4%	18.3%
2018	17.6%	15.3%	16.7%	14.9%	14.8%	22.8%	17.8%	19.3%
2019	17.0%	—	18.1%	15.5%	—	23.3%	18.3%	20.3%

Source: OECD (2021c), *Investment by Sector* (indicator), <https://data.oecd.org/gdp/investment-by-sector.htm#indicator-chart>.

governments, respectively. The data reported in table 4 shows that Canada had the highest ratio of household investment to GFCF of all the sample countries from 2011 onward, and in only one year (2016) was Canada's ratio exceeded by another country (Australia).<sup>11</sup> The post-2008 housing bubble burst in the United States and Australia is identifiable by the substantial decline in the household sector's share of GFCF post-2005 in those two countries.

While the household share of GFCF in the US was comparable to Canada's share over most of the long period from 1981 to 2005, household investment (essentially in residential housing) was markedly higher as a share of GFCF in

<sup>11</sup> Australia's household share of GFCF was also higher than Canada's in 2014 and 2015 but not for the 2011 to 2015 average.

Canada after 2005, and particularly after 2010.<sup>12</sup> Whether household investment in Canada "crowded out" corporate investment cannot be inferred from the data in tables 3 and 4. However, it is clear that the environment for business investment in Canada in recent years has been substantially less favourable than the environment for household investment, particularly when compared to other OECD countries with comparable data.

Table 5 reports government investment as a share of GFCF for the same countries and periods as included in tables 3 and 4. For Canada, while government's share of GFCF is comparable to or smaller than the other sample countries prior to 2011 except for Australia, this is

<sup>12</sup> Residential housing is the main component of household investment.

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less the case post-2011. Indeed, from 2016 to 2019, only Norway, Finland, and Sweden had larger government shares of GFCF than did Canada. Hence, there is some indirect basis for a conclusion that both household and government capital investment crowded out corporate investment in Canada in the post-2010 period.

## GFCF by asset category

A consideration of changes over time in capital expenditures across asset categories provides additional perspective on the behaviour of total capital expenditures in Canada. The OECD website from which most of the data for this report are drawn reports capital expenditure shares for six asset categories. The two largest are residential dwellings and other buildings and structures.<sup>13</sup> The other four are machinery and equipment,<sup>14</sup> intellectual property products, transportation equipment, and cultivated assets. Machinery and equipment includes information and communications equipment and any machinery and equipment assets not classified as “transport equipment.” Intellectual

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<sup>13</sup> Other buildings and structures include roads, bridges, airfields, dams, and related infrastructure.

<sup>14</sup> The OECD labels this category as “information and communication technology” (or ICT) but an analysis of Canada’s quarterly national accounts as reported by the OECD shows that a substantial portion of the “Other machinery and equipment+weapon systems” category is also included in Canada’s reported values. For example, Canada’s 2019 value for ICT in the national accounts is \$26.5 billion in 2019 but the ratio shown on the OECD’s “Investment by Asset” webpage reports a value equivalent to \$54.2 billion. This means that roughly \$27.7 billion of Canada’s \$46.1 billion in the “Other machinery and equipment+weapon systems” national accounts category has been included as “ICT” for the “Investment by Asset” webpage.

property encompasses intangible assets such as R&D, mineral exploration, software and databases, and original literary and artistic works. Transportation equipment includes ships, trains, airplanes, and so forth, while cultivated assets includes categories such as managed forests and livestock raised for milk production.

It is not possible from the way the data are reported on the OECD website to assign shares of capital expenditures in each of the individual asset categories to specific economic sectors. Presumably business and government primarily account for investments in building and structures, while dwellings primarily reflect investments by households in residences. Machinery and equipment is likely to reflect primarily corporate investment expenditures, as is the asset category identified as intellectual property products. Both corporations and governments are likely to be responsible for capital investments in transportation equipment and cultivated assets.

In the interest of brevity, we do not present data on the shares of GFCF accounted for by transportation equipment and cultivated assets. Transportation equipment accounts for less than four percent of GFCF in Canada between 2010 and 2019, while the OECD does not report the share of GFCF represented by cultivated assets for Canada. Over the entire period from 1981 to 2019, the four included asset categories account for around 84 percent of all capital expenditures in Canada. Hence, the behaviour over time of the four included asset categories will largely reflect the time series behaviour of total gross capital expenditures. For easier exposition, table 6a reports the average value of the asset categories across the seven OECD countries covered in tables 3 to 5 for the various periods, as well as separate series for the

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**Table 6a: Share of Specific Asset Categories in Total GFCF**

	Other Buildings and Structures			Dwellings		
	Canada	OECD 7*	US	Canada	OECD 7*	US
1981-1985	37.2%	31.0%	28.2%	23.8%	21.1%	18.2%
1986-1990	31.3%	29.6%	23.8%	29.7%	20.3%	21.1%
1991-1995	31.0%	30.1%	21.7%	27.2%	20.4%	20.1%
1996-2000	28.6%	29.0%	21.1%	23.1%	18.8%	20.7%
2001-2005	27.9%	28.6%	20.6%	27.9%	21.5%	25.5%
2006-2010	33.6%	32.1%	25.3%	29.4%	20.4%	18.5%
2011-2015	39.6%	32.5%	23.7%	29.1%	20.3%	14.8%
2016	36.1%	30.2%	22.7%	34.2%	23.3%	18.3%
2017	34.9%	29.8%	22.7%	34.7%	23.9%	18.9%
2018	35.4%	30.0%	22.5%	33.6%	23.4%	18.5%
2019	35.5%	31.3%	22.5%	33.4%	22.2%	18.0%

\*USA, Australia, France, Korea, Norway, Finland, Sweden.

Source: OECD (2021d), *Investment by Asset* (indicator). <https://data.oecd.org/gdp/investment-by-asset.htm#indicator-chart>.

United States.<sup>15</sup> Table 6b uses a similar structure although we could not include all countries due to data limitations.

Looking first at buildings and other structures in table 6a, we see that prior to 2011, with one sub-period exception, buildings and other structures accounted for essentially the same or a higher share of GFCF in the seven OECD countries, on average, than in Canada.

From 2011 through 2019, buildings and other structures were a substantially higher share

<sup>15</sup> The series reported for the OECD is a simple average of the percentages calculated for each constituent country rather than a weighted (by size of GFCF) average. Given the much larger size of the US economy, a weighted average for the included OECD countries would predominantly reflect the US experience.

of GFCF in Canada than in the other sample countries, although the share for Canada was significantly lower in 2019 than in the 2011 to 2015 sub-period. In every sub-period and individual year, Canada's share of buildings and other structures is higher than the share in the US. Table 6a therefore suggests that the slower growth of GFCF in Canada relative to other OECD countries in recent years is not the outcome of slower growth of buildings and other structures.

The pattern for residential dwellings is quite clear and consistent throughout the entire period from 1981 to 2019. Specifically, Canada has the highest share of GFCF going to residential dwellings, and the difference between Canada and other sample countries is especially marked for the years 2016 to 2019. Indeed, dwellings as a share of GFCF in Canada is al-

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**Table 6b: Share of Specific Asset Categories in Total GFCF**

	Machinery and Equipment			Intellectual Property Products		
	Canada	OECD 4*	US	Canada	OECD 5***	US
1981-1985	7.9%	8.3%	9.6%	8.4%	10.0%	16.3%
1986-1990	9.2%	9.8%	11.2%	8.7%	11.4%	18.7%
1991-1995	11.6%	10.9%	13.0%	11.5%	13.6%	20.9%
1996-2000	14.4%	12.8%	15.9%	13.3%	14.7%	21.1%
2001-2005	13.5%	12.7%	14.4%	15.1%	15.9%	22.0%
2006-2010	11.3%	11.3%	15.2%	13.7%	17.2%	24.3%
2011-2015	9.2%	11.2%	16.4%	12.4%	19.0%	26.5%
2016	10.1%	11.8%	15.9%	12.2%	19.2%	26.5%
2017	10.3%	12.2%	16.0%	12.5%	19.2%	26.4%
2018	10.7%	12.4%	16.2%	12.5%	19.7%	26.8%
2019**	10.5%	12.3%	16.2%	12.4%	20.1%	27.6%

\* USA, Australia, France, Norway.

\*\* Norway's value estimated for 2019.

\*\*\* USA, Australia, France, Korea, Norway.

Source: OECD (2021d), *Investment by Asset* (indicator). <https://data.oecd.org/gdp/investment-by-asset.htm#indicator-chart>.

most twice as high as the value for the US for the years 2016 to 2019.

The data in table 6b show that the share of machinery and equipment in GFCF is higher in Canada or equal to the average of the five OECD countries for most periods between 1981 and 2010. In some periods, the Canadian share is comparable to that of the other OECD countries, although it is consistently below that of the United States. However, Canada's share is noticeably lower than the OECD average from 2011 to 2019. Canada's share of machinery and equipment in GFCF is consistently below the US share with the absolute difference being significantly larger in the post-2011 period than in the pre-2011 period.

The pattern for intellectual property products (IPP) reported in table 6b is compelling. Investment in IPP as a share of GFCF in Canada is lower than it is elsewhere in every sub-period and every individual year for which this data is reported. Furthermore, the differences between Canada and other countries from 2011 through 2019 are absolutely and relatively larger than in earlier periods. Hence, for the asset categories reported in table 6b, Canada's relative deficit compared to other OECD countries in investment in those categories compared to other asset categories persisted throughout the 2010–2019 decade.

The asset categories summarized in table 6b largely reflect business investment. They also

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arguably reflect asset categories that are particularly important to developing and diffusing new technology into economies.<sup>16</sup> Hence, the data in tables 6 and 7 highlight the potential importance of changes in the mix of capital expenditures to Canada's absolute and relative (to other developed countries) productivity performance.

Put simply, the data reported in table 6b, in conjunction with the data reported in earlier tables, underscores Canada's continuing problem with industrial competitiveness. Specifically, business investment in Canada continues to lag behind that of other OECD countries and especially the United States. This is particularly the case for asset categories that arguably make the largest contributions to productivity growth. In short, this bulletin identifies a continuing problem with Canada's international competitiveness discussed in the earlier Gliberman and Press (2018) bulletin.

## Summary and conclusions

This study examines overall capital expenditures in Canada over time and relative to other countries. It also identifies changes in the mix of capital expenditures over time both across sectors and across asset categories. One main finding is that overall capital investment in Canada, as measured by gross fixed capital formation, grew substantially more slowly in recent years than in earlier periods, and more slowly in recent years than in other OECD countries. Indeed, while GFCF grew at a faster rate in Canada than in our sample of OECD countries from 1995 to 2010, the growth rate

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<sup>16</sup> This latter observation suggests that Canada has not done as well as other developed countries when it comes to investment in the new "information economy."

was lower in Canada, particularly compared to the United States, after 2010.

Recent discussion in Canada has focused on a worrisome decline in the growth of business investment. In this regard, a relevant finding of this bulletin is that the share of business investment in total GFCF for Canada was lower in the years from 2016–2019 than it was in earlier sub-periods going back to 1981, whereas the reverse is true for the United States. Particularly concerning is the declining share of business investment in asset categories that are arguably most closely associated with technological change, especially investments in machinery and equipment and intellectual property products. Conversely, household investment as a share of GFCF was higher in Canada than in other OECD countries over the period 2011 to 2019, particularly in the most recent years. This pattern also holds for Australia where housing prices in major cities enjoyed large increases, as is also true for Canada. The substantial growth in dwellings as a share of GFCF in Canada in recent years presumably reflects the increased demand of households for dwellings.

Any decrease in capital expenditure growth rates can be a concern given the linkage between capital investment and labour productivity growth. The data discussed in this essay also underscore Philip Cross's (2017) observation that changes in the mix of capital assets across sectors and asset categories can also matter to economic performance. The mix has changed substantially in Canada in recent years, and future research needs to address what a continuation of a changing mix means for the performance of the Canadian economy. While GDP growth rates in Canada have been comparable to those in the US and the OECD after 2005, the recent weaker capital investment performance and the changing mix of capital in-

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vestment in Canada raise significant concerns about Canada's absolute and relative growth performance in the future.

It is possible that the relatively favourable treatment of capital gains on owner-occupied dwellings compared to the treatment of capital gains on business-related investments is contributing to the changing distribution of investment across asset categories. Certainly, more favourable tax treatment of business income and capital gains is a priority for policymakers to consider against the backdrop of a slower-growing and aging workforce with the concomitant need for faster rates of labour productivity growth in order to accelerate real economic growth, as well as raise the standards of living of individual Canadians.

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