

Industry-Level Private Sector Capital Expenditures in Canada: 1990-2019

by Steven Globerman and Joel Emes



SUMMARY

■ Recent concerns about Canada's industrial competitiveness compared to that in other developed countries, particularly the US, have focused on declines in private sector capital expenditures, especially in asset categories such as machinery and equipment that are critical to improvements in productivity.

■ Those calling for stronger government initiatives to improve the investment environment in Canada's private sector argue that weak investment performance is widespread across domestic industries. This bulletin asks whether post-2014 declines in aggregate capital expenditures in Canada's private sector are broadly representative of many (or most) Canadian industries, or whether the decline is limited to only a few, albeit large, domestic industries.

■ This study finds that while the majority of Canadian industries reduced their capital ex-

penditures from 2014 to 2017, slightly less than half did so between 2014 and 2019.

■ While the mining industry (including oil and gas) experienced the largest decline in investment from 2014 to 2019, 7 of our sample of 15 industries experienced a decline over that period.

■ Over the 2014–2019 period, a majority of industries decreased their investments in the specific asset categories of machinery and equipment plus intellectual property products.

■ The country's recent weak investment performance, especially in machinery and equipment plus intellectual property products, which is so critical to improving productivity, augurs poorly for future productivity growth in Canada's private sector and underscores the urgency of tax and regulatory reforms to strengthen incentives for investment and entrepreneurship in Canada's business sector.

Introduction

There has been much debate in Canada recently about Canada's competitiveness compared to other developed countries. Much of the debate has focused on a recent decline in private sector capital investment, particularly in asset categories that are critical to improvements in productivity such as machinery and equipment.¹ Critics of the Canadian government's tax and regulatory policies have highlighted a flight of capital investment from Canada to other countries, especially to the United States (Oliver, 2018). In particular, critics have pointed to a decrease in inward foreign direct investment to Canada accompanied by large increases in outward foreign direct investment from Canada as evidence that Canada has become a much less attractive location for investment to multinational companies.²

In an earlier study, Globerman and Emes (2019) presented evidence that a majority of Canadian industries reduced their capital expenditures from 2014 to 2017. Their finding was noteworthy in that much of the concern at that time about declining capital investment was focused on Canada's energy sector. While the mining industry, which includes the oil and gas sector, experienced the largest decline in investment from 2014 to 2017, about two-thirds of the sample of 15 industries covered in the Globerman and Emes study experienced a decline in investment over that period.

¹ Cross (2017) and Globerman and Press (2018) provide empirical evidence of declines in business capital investment in Canada in recent years.

² For recent evidence on inward and outward foreign direct investment for Canada, as well as a discussion of the interpretation of the evidence, see Globerman (2019).

Even prior to the COVID-19 pandemic, the Canadian government was arguably reluctant to acknowledge the magnitude and relevance of relatively weak business investment in Canada. In the federal government's budget of 2018, Finance Minister Morneau introduced a program of accelerated depreciation allowances, as well as \$365 million in tax credits for mineral exploration.³ In announcing those measures, Morneau lauded the accelerated depreciation allowances as providing an incentive to encourage more businesses to invest in Canada, which, in turn, would help drive business growth over the long-term (Wingrove, 2018). One purpose of this essay is to identify whether investment in Canada did, indeed, increase after 2017.

Critics of the federal government's budget argue that the government is seriously underestimating the magnitude of Canada's competitiveness problem, and that stronger measures should have been taken to improve Canada's fiscal and regulatory environment for business investment.⁴ Such measures would include reducing corporate and personal tax rates, doing more to eliminate regulatory red tape, and easing legal restrictions on pipeline investments, as well as other policies that have substantially reduced the profitability of investing in Canada's oil and gas sector (Clemens and Veldhuis, 2019). Indeed, much of the focus of concern about government policies inimical to business investment has been on the energy industry (Globerman and Emes, 2019). However, executives in Canada's banking sector have argued vociferously that Canada's declining competi-

³ These measures are set to expire in 2024, unless they are renewed.

⁴ See, for example, Mintz (2018) and Fuss, Palacios, and Clemens (2018).

tiveness is broad-based and is not restricted to the (admittedly) important oil and gas sector (Clemens and Veldhuis, 2019).

While some observers argue that Canada's competitive position has improved recently, particularly relative to the United States, serious concerns remain about the outlook for the productivity performance and overall competitiveness of Canadian industries.⁵ The primary purpose of this bulletin is to identify and assess recent capital expenditure patterns across a set of Canadian industries. The specific focus is to identify whether the broadly based declines in aggregate investment expenditures from 2014 to 2017 continued through 2019. We find that overall capital expenditures increased in 2018 and 2019 relative to 2017 and that fewer industries experienced a decline in investment in the 2014 to 2019 period compared to the 2014–2017 period. Still, almost half of Canadian industries invested less in 2019 than they did in 2014. Perhaps of greater concern, a majority of Canadian industries invested less in machinery and equipment and intellectual property products in 2019 than in 2014.

Over a long, 19-year period (1990 through 2019), it would be rare for a majority of industries to reduce their capital expenditures in these two productivity-enhancing asset categories over as long a period as four to five years. Hence, our evidence supports a broad concern about the outlook for productivity growth and the future competitiveness of Canada's entire industrial sector and not just a concern about its energy sector.

⁵ See Carmichael (2020) for an elaboration of this assessment.

Conceptual background

Capital expenditures across different industries in an economy will be influenced by similar factors, including overall economic growth, interest rates, nominal tax rates, and the extent of economic and political uncertainty. At the same time, the investment conditions surrounding individual industries will likely differ given differences across industries in factors such as the nature and severity of regulations, effective tax rates, exposure to foreign competition, and other industry-specific factors. Consequently, while one might expect broad similarities across industries in patterns of capital expenditures, especially over extended periods, specific industries may be significant exceptions if they are subject to unique industry-specific conditions.

As noted earlier, much of the concern expressed about Canada's weakening competitiveness has focused on the oil and gas industry. Regulatory restrictions on new pipeline capacity are limiting exports of Western Canadian crude oil and, therefore, contributing to relatively low prices for crude oil with resulting profit declines for domestic oil and gas companies.⁶ The press have cited numerous examples of Canadian oil and gas companies reallocating their capital budgets away from exploration and production activities in Canada to Texas and North Dakota.⁷ Given the relative size of the sector, decreasing capital expenditures by Canadian oil and gas companies will certainly have

⁶ More recently, there has been a recovery in the price of Western Canadian Select (WCS) crude oil. To illustrate, the price of WCS increased from \$20.11/barrel in the January–March 2020 period to \$46.66/ barrel in the January–March 2021 period. See Government of Alberta, Economic Dashboard: Oil Prices, <https://economicdashboard.alberta.ca/OilPrice>.

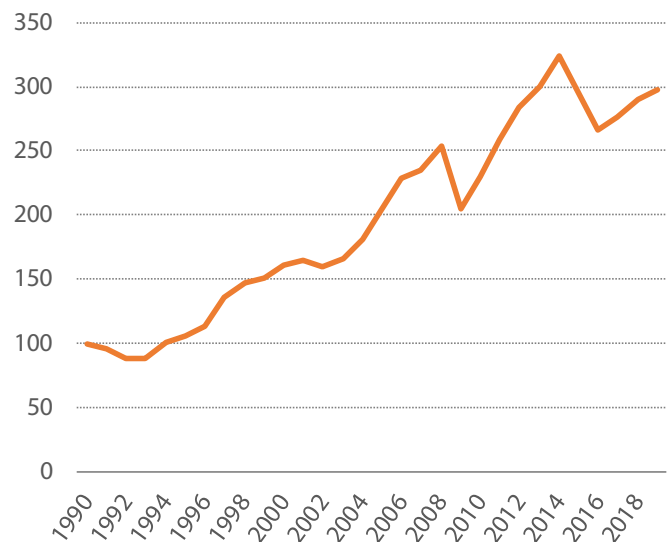
⁷ For a review of this evidence, see Globerman and Emes (2019).

a substantial impact on total private sector capital expenditures. In this regard, Globerman and Emes (2019) report that as recently as 2014, capital expenditures for oil and gas extraction accounted for upwards of 28 percent of total Canadian capital expenditures. Hence, it might be misleading to generalize about Canada's industrial competitiveness from the behaviour of total business capital expenditures, since a major investment decline in the oil and gas industry will have a substantial effect on total capital expenditures. Therefore, it is useful to look at capital expenditure patterns on an industry-specific basis.

It is also useful to study capital expenditure patterns over a number of decades, if possible. The point here is that if recent capital expenditure behaviour is unusual compared to earlier periods, one has more confidence in concluding that declining investment in Canada is, indeed, a cause for concern rather than a temporally recurring pattern that is likely to be reversed with an upswing in business cycle conditions. The earliest year for which a consistent data series can be constructed is 1961. However, given the implementation of the Canada-US Free Trade Agreement in 1989, with its important effects on Canadian productivity performance, it seems more appropriate to begin our sample in 1990. The latest year for which reliable data on investment in fixed non-residential capital is available at the two digit-industry level is 2019. Hence, our analysis of capital expenditures encompasses a sufficiently long period to provide reliable guidance on whether expenditure patterns in recent years are unusual or recurring.

Capital expenditures consist of investment in fixed non-residential capital, including investments in non-residential buildings, engineering construction, machinery and equipment, and

Figure 1: Capital Expenditure Index



Source: Statistics Canada, Table 36-10-0097-01.

intellectual property (IP) products.⁸ Machinery and equipment was the largest single asset category for investment in each year from 1990 to 2009. From 2010 to 2019, engineering construction was the single largest asset category. Non-residential building accounted for the smallest share of total capital expenditures starting in 1998.

As figure 1 indicates, capital expenditures in 2019 were substantially higher than in 1990, although well below the peak level reached in 2014. Figure 1 shows that over any relatively lengthy period, such as from 1990 to 2019, capital expenditures were likely to increase when the economy was growing. Hence, if one is interested in evaluating whether recent experience is different from past experience, it makes

⁸ The source of these data is Statistics Canada (2019a).

sense to compare the change in capital expenditures over shorter time periods than the full 30 years for which we have data. We do so by looking at the growth in private sector capital expenditures over (mostly) five-year periods starting in 1990. Specifically, we create index values for capital expenditures using the following base years: 1990, 1995, 2000, 2005, 2010 and 2014. That is, the capital expenditure values in those years are given an index value of 100. Index values for the subsequent years, say 1991 to 1995, are estimated by dividing the capital expenditure in each of those individual years by the capital expenditure in 1990. Similarly, by dividing capital expenditures in years 2001 to 2005 by capital expenditures in year 2000, index values are created for years 2001 to 2005, and so forth.⁹ The base year chosen for the final period (2014) reflects previous research indicating that capital expenditures in Canada declined significantly after 2014 (see Cross, 2017). Our main objective in this study is to assess the extent of this decline across specific industry sectors, although we are also interested in identifying how different the recent investment experience has been in Canada compared to other relatively short-run investment cycles.

Data analysis

Table 1 presents results for overall private sector capital expenditures expressed as index values as outlined in the previous section. Index values are reported for six distinct periods. In calculating the index values for overall private sector capital expenditures, we exclude several industries. Specifically, we exclude educational services, health care and social assistance, non-

⁹ The end year for each sub-period, e.g. 1990–1995, therefore becomes the base year for the next sub-period, i.e. 1995–2000.

Table 1: Capital Expenditures Index Values—Industry Aggregate

Sub-Periods	Year	Value
1990 - 1995	1990	100.0
	1991	95.4
	1992	87.8
	1993	88.5
	1994	100.3
	1995	105.6
1995 - 2000	1995	100.0
	1996	106.7
	1997	128.2
	1998	139.3
	1999	143.1
	2000	152.5
2000 - 2005	2000	100.0
	2001	102.1
	2002	98.8
	2003	102.7
	2004	112.7
	2005	127.3
2005 - 2010	2005	100.0
	2006	111.4
	2007	114.6
	2008	123.9
	2009	100.1
	2010	111.8
2010 - 2014	2010	100.0
	2011	113.0
	2012	123.6
	2013	130.9
	2014	141.4
2014 - 2019	2014	100.0
	2015	91.0
	2016	82.2
	2017	85.1
	2018	89.3
	2019	91.6

Source: Statistics Canada, Table 36-10-0097-01.

profit institutions serving households,¹⁰ and public administration. Given the prominence of governments in determining expenditures in these sectors, including capital expenditures, it seemed advisable to exclude these sectors from an analysis that is concerned with the private sector investment environment in Canada.¹¹

In each of the sub-periods (1995–2000; 2000–2005, 2005–2010, and 2010–2014), the index value in the end year is higher than in the base year, indicating that investment expenditures at the end of the sub-period are greater than at the beginning of the sub-period. In only one sub-period (2014–2019) is the index value at the end of the period below the base year value of 100, indicating that investment expenditures declined over that sub-period. To be sure, the index value has been increasing since its nadir in 2016. Nevertheless, the 2014–2019 period is unique in having a lower capital expenditure (in current dollars) at the end of the period than at the beginning of the period.

Certainly, there are years within sub-periods where investment expenditures declined. The early 1990s provide one example, while 2001–2002 and 2008–2009 provide others. The early 1990s were a recessionary period in the economy, while 2008–2009 encompassed a severe recession related to the collapse of the housing and financial markets in the US. The 2014–2019 sub-period stands out as being unique in its prolonged contraction of capital investment in the absence of a severe recession.

¹⁰ A small category built from parts of NAICS 62 (health care and social services) and 81 (other services).

¹¹ The appendix lists the full sample of industries used in this essay.

Table 2: Industries with Higher/Lower End Period Values

Sub-Periods	Higher	Lower	Percent Higher	Weighted Percent Higher
1990 - 1995	11	4	73.3%	66.7%
1995 - 2000	15	0	100.0%	100.0%
2000 - 2005	12	3	80.0%	81.1%
2005 - 2010	11	4	73.3%	71.2%
2010 - 2014	13	2	86.7%	92.1%
2014 - 2019	8	7	53.3%	59.8%

Source: Statistics Canada, Table 36-10-0097-01.

Table 2 provides information relevant to the issue of whether decreasing capital investment was a broadly based phenomenon in recent years or whether it was isolated to a few industries, primarily the energy sector. It also provides additional information on the degree to which the capital expenditure experience of earlier sub-periods is similar to the experience of 2014 to 2019. Since industry-level data on capital expenditures is available only at the two-digit level, the industry categories are relatively broad. For example, the oil and gas sector is included as part of the broader mining industry classification, while manufacturing includes all primary and secondary manufacturing industries.¹²

¹² The list of the two-digit (North American Industry Classification System) industries in our sample is again provided in the Appendix. Primary manufacturing involves the retrieval and production of raw materials. Secondary manufacturing involves the transformation of raw or intermediate materials into goods.

Table 2 reports the number of industries for which the end period index value of capital expenditures is higher than the beginning period value, as well as the number of industries for which the end period index value of capital expenditures is lower than the beginning period index value. The beginning index value for each sample period is always set equal to 100, as noted above. We also report the simple and weighted percentage of the total industry sample for which the end period value of capital expenditure exceeds 100 indicating that capital investment increased over the period. The weighted percentage is calculated by adding the capital expenditures in each industry for which the index value exceeds 100 and then dividing the sum by the total capital expenditures for the industry total in the relevant five-year sub-period.

The information reported in table 2 shows that the sub-period 2014–2019 has the highest percentage of industries with lower capital expenditures at the end of the sub-period than at the beginning. Specifically, almost half of the sample industries have less investment in 2019 than in 2014.¹³ This result represents an improvement over the 2014–2017 experience reported in Globerman and Emes (2019) during which the number of industries characterized by decreasing capital expenditures exceeded the number of industries characterized by increasing capital expenditures. The improved performance over the longer 2014–2019 sub-period reflects the previously noted increase in capital expenditures since 2016.

The specific industries with decreasing capital expenditures in the 2014–2019 sub-period

include agriculture, mining, quarrying and oil and gas extraction, utilities, retail trade, administrative services, accommodation, and other services. The industries experiencing increases include construction, manufacturing, wholesale trade, transportation, information and culture industries, finance, professional and scientific services, and arts and entertainment. The most comparable experiences to 2014–2019 are 1990–1995 and 2005–2010, although the latter two sub-periods had over one-third more industries with increasing capital expenditures compared to 2014–2019, and those periods were also marked by substantial recessions.

A potential concern about the information reported in table 2 is that the identification of an industry as exhibiting an increase or decrease in capital expenditures relies solely upon a comparison of the index value at the end of each sub-period to the beginning sub-period value of 100. It might be that the yearly index values for any sub-period increased consistently until the last year before declining substantially. A sufficiently large decline in the final year might result in the index value for the final year being below 100. If so, the industry would be classified as having reduced its capital expenditures for that sub-period. While this would be true, strictly speaking, it is a qualitatively different capital expenditure experience than if the yearly index values decreased on average over the entire sub-period. A symmetrical concern arises to the extent that the index value in the last year of any sample period is much larger than 100, even though the index series for the intervening years between the beginning and end of the sub-period is declining.¹⁴

¹³ It should be emphasized that the capital expenditure estimates are in current dollars. That is, they do not account for price inflation in capital goods.

¹⁴ In brief, end-of-period outliers for individual sub-periods can lead to potentially misleading inferences.

Table 3: Average Index Values for Sub-Periods

	1990 – 1995	1995 – 2000	2000 – 2005	2005 – 2010	2010 – 2014	2014 – 2019
Industry Aggregate	96.3	128.3	107.3	110.3	121.8	89.9
Agriculture, forestry, fishing and hunting	111.3	118.4	96.3	113.7	115.1	91.2
Mining, quarrying and oil and gas extraction	121.7	124.1	128.6	114.2	135.6	65.0
Utilities	91.3	96.4	137.5	130.7	133.4	91.6
Construction	105.9	121.8	102.0	126.0	110.0	99.3
Manufacturing	89.3	120.7	90.7	94.1	112.1	104.8
Wholesale trade	134.6	129.2	109.5	116.4	110.4	97.5
Retail trade	127.9	108.3	127.1	112.5	110.3	94.8
Transportation and warehousing	111.7	161.6	95.3	131.8	140.4	119.3
Information and cultural industries	94.2	142.1	108.4	88.4	101.7	122.5
Finance, insurance, real estate, rental and leasing	75.5	147.2	97.2	99.2	92.4	103.8
Professional, scientific and technical services	158.2	151.5	88.9	121.6	113.7	105.0
Administrative and support, waste management and remediation services	134.8	111.8	126.2	154.0	130.6	80.8
Arts, entertainment and recreation	85.7	123.7	122.7	118.9	147.0	131.7
Accommodation and food services	77.3	136.7	159.4	117.0	120.4	96.8
Other services (except public administration)	135.9	106.6	119.4	105.4	91.6	93.3

Source: Statistics Canada, Table 36-10-0097-01.

We attempt to mitigate this potential concern by calculating the average of the index values for each year of a given sub-period including the initial year. For example, in table 3, the average value reported for 1990 to 1995 is the average of the index values for each individual year from 1990 to 1995. We can interpret the information reported in table 3 as showing whether capital expenditures increased or declined, on average, during each sub-period. Specifically, an average value exceeding 100 indicates an average increase in capital expenditures in the sub-period, while an average value below 100 indicates a decrease. The averaging

process reduces, although does not eliminate, the influence of the last year's index value in determining whether capital expenditures increased or decreased. In table 3, we report the average index value for each sub-period for each of our sample industries.

The vast majority (around two-thirds) of average index values reported in table 3 are above 100. That is, capital expenditures increased, on average, in more than two-thirds of the sub-periods across the full sample of industries. The sub-period 2014–2019 is an obvious exception. Specifically, capital expenditures decreased for nine of the 15 sample industries during the

Table 4: Average Index Values for Sub-Periods, M&E and IPP only

	1990 – 1995	1995 – 2000	2000 – 2005	2005 – 2010	2010 – 2014	2014 – 2019
Industry Aggregate	102.3	132.1	103.8	101.4	108.3	97.6
Agriculture, forestry, fishing and hunting	116.9	115.9	98.2	107.9	119.7	74.5
Mining, quarrying and oil and gas extraction	112.9	146.8	127.2	110.7	113.8	70.5
Utilities	88.7	101.4	117.6	114.9	135.5	80.8
Construction	111.4	122.4	99.3	125.7	110.3	98.6
Manufacturing	95.0	118.8	95.0	90.9	104.0	111.2
Wholesale trade	140.3	134.4	105.5	114.0	111.8	97.3
Retail trade	140.0	110.0	115.6	111.8	102.4	96.1
Transportation and warehousing	112.6	178.7	109.3	106.1	123.6	117.2
Information and cultural industries	102.7	139.5	114.7	87.9	99.8	128.3
Finance, insurance, real estate, rental and leasing	89.9	147.8	94.7	93.2	90.0	95.8
Professional, scientific and technical services	160.7	145.2	90.0	118.5	113.8	106.1
Administrative and support, waste management and remediation services	131.0	107.5	123.8	149.0	116.4	87.1
Arts, entertainment and recreation	117.0	112.9	136.3	110.1	124.6	108.1
Accommodation and food services	96.0	131.1	140.7	94.3	125.1	102.8
Other services (except public administration)	139.8	105.8	120.9	103.4	93.3	91.7

Source: Statistics Canada, Table 36-10-0097-01.

2014–2019 sub-period. The closest sub-period to 2014–2019 is 1990–1995, when capital expenditures decreased, on average, for six of the 15 sample industries. The data reported in table 3 therefore reinforces our conclusions from earlier tables. Namely, capital investment weakness is widespread across two-digit industries over the sub-period 2014–2019, although not as weak as Globerman and Emes (2019) findings for the 2014–2017 period. Still, 2014–2019 is the only sub-period post-1990 during which capital expenditures declined, on average, across the majority of industries.¹⁵

¹⁵ Since each sub-period is indexed to a base year value of 100, one should not directly compare the

Finally, we focus on capital expenditures on machinery and equipment and intellectual property products. These are investments that are particularly likely to improve industrial productivity and wages, and an earlier study documents that aggregate capital expenditures on these two asset categories was especially weak during the period 2014–2017 (Globerman and Press, 2018). We employ the same procedure as

average values reported in table 3 across sub-periods as measures of relative or absolute differences. For example, the industry aggregate index value for 2014–2019 is 89.9, while it is 96.3 in 1990–1995. This should not be interpreted as showing that investment in 2014–2019 was approximately 6 percent lower than in 1990–95.

we used to create table 3. In particular, we use the same sub-periods and the same averaging procedure as we did for table 3, only we include capital expenditures solely for machinery and equipment plus intellectual property products. The estimates are reported in table 4.

The data reported in table 4 show that as in the case of investments on all capital assets, the average investment index in each sub-period is above 100 for the majority of industries with the exception of 2014–2019. In this sub-period, nine of the 15 sample industries experienced a decline in the average index value for expenditures on machinery and equipment plus intellectual property products.¹⁶ Not surprisingly, mining, quarrying, and oil and gas extraction had the lowest average index value for the sub-period 2014–2019. This undoubtedly reflects the sharp drop in the price of WCS crude oil over this period. However, declines in average index values are identified for eight other industries as well over the 2014–2019 sub-period, albeit not as dramatic as in the case of mining, quarrying, and oil and gas extraction. The sub-period with the next largest number of industries for which the average index value was below 100 is 2000–2005, for which five industries show investment declines.

It is interesting to note that a greater number of industries exhibited a decrease in capital expenditures on machinery and equipment plus intellectual property products than on overall capital expenditures during the sub-period 2014–2019. The particularly weak investment performance for machinery and equipment and intellectual property products in recent years

augurs especially poorly for future productivity growth in Canada's private sector.

Concluding comments

The collapse in capital investment in the oil and gas sector post-2014 is well known, and this collapse has been linked to a decline in overall capital investment in Canada in recent years. Less well documented is the breadth of the decline in capital investment across a range of industries. This bulletin identifies the behaviour of capital expenditures over various sub-periods since 1990 for 15 industries. It shows that non-residential private sector investment experienced an overall decrease post-2014 that is unique in the post-1990 period. Also unique is the breadth of this decline across industries in the post-2014 period. More industries experienced decreases in non-residential capital investment post-2014 than in earlier sub-periods, even though there were no major recessions in the past few years comparable to recessions in the early 1990s and in 2008–2009.

Machinery and equipment and intellectual property products are particularly important asset categories, inasmuch as they are critical to improvements in productivity. As is the case for overall capital expenditures, the post-2014 period is characterized by broad weakness across our sample of industries in capital expenditures for these two specific asset categories. This latter development augurs poorly for future growth in industrial productivity in Canada in the absence of policy changes that improve the investment environment in Canada's private sector. While the oil and gas industry has suffered most from a deteriorating competitive environment, competitiveness problems arguably continue to adversely affect investment across a broader range of Canadian industries.

¹⁶ Globerman and Emes (2019) identified eight industries that experienced a decline in capital expenditures in machinery and equipment and intellectual property products over the period 2014–2017.

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Appendix

Included industries: North American Industry Classification System

1. Agriculture, forestry, fishing and hunting (11)
2. Mining, quarrying and oil and gas extraction (21)
3. Utilities (22)
4. Construction (23)
5. Manufacturing (31-33)
6. Wholesale Trade (41)
7. Retail Trade (44-45)
8. Transportation and warehousing (48-49)
9. Information and culture industries (51)
10. Finance, insurance, real estate, rental & leasing (52-53)
11. Professional, scientific and technical services (54)
12. Administrative support, waste management & remediation services (55-56)
13. Arts, entertainment and recreation (71)
14. Accommodation and food services (72)
15. Other services (except public administration) (81)

Excluded industries: North American Industry Classification System

1. Educational services (61)
2. Health care and social assistance (62)
3. Non-profit institutions serving households (parts of 62 & 81)
4. Government sector (91)



Steven Globerman is Resident Scholar and Addington Chair in Measurement at the Fraser Institute as well as Professor Emeritus at Western Washington University. He has published more than 150 articles and monographs and is the author of the book **The Impacts of 9/11 on Canada-U.S. Trade** as well as a textbook on international business management. In the early 1990s, he was responsible for coordinating Fraser Institute research on the North American Free Trade Agreement.



Joel Emes is President of Abacus Economics and a Fraser Institute Senior Fellow who rejoined the Institute after a stint as a senior advisor to British Columbia's provincial government. Joel holds a B.A. and an M.A. in economics from Simon Fraser University.

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