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INNOVATION AND BUSINESS GROWTH

## From Chronic to Acute: Canada's Investment Crisis

by

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- Business investment in Canada lags investment in the United States and in other advanced economies.
- The gap has widened during the COVID-19 crisis, notably in intellectual property products.
- Without public policies that promote saving and investment, Canadian workers will not get the capital they need to compete and prosper.

Private-sector investment that boosts Canada's stock of machinery, buildings, engineering infrastructure and intellectual property is critical to economic growth. As it occurs, private-sector investment creates demand for products and services, boosting output and employment. Once in place, it equips workers to raise their output: the buildings where people work, the infrastructure that moves intermediate and final products and services to market, the tools workers use in their jobs and the intellectual property that drives innovation. These outcomes, in turn, increase

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productivity, raising output per hour worked – which is critical in raising incomes and living standards over time.<sup>1</sup>

Unhappily, the latest figures tell a bleak story. Statistics Canada's data on both the country's capital stock and gross investment show declines since mid-decade. The first three quarters of 2020 indicate that spending for the year will be lower than at any time since the late 1990s. The weakness in spending on structures – traditionally an area of strength – the machinery and equipment that fuel productivity, and intellectual property (IP) products, a category that includes research and development, mineral exploration, software, databases and artistic creations, is alarming. Dividing national investment by national labour force numbers to produce investment-per-available-worker measures for Canada, the United States, and other member countries of the Organisation for Economic Co-operation and Development (OECD) reveals that Canada's relative performance – which had improved from the early 2000s to the mid-2010s – sagged after mid-decade and plunged in 2020.

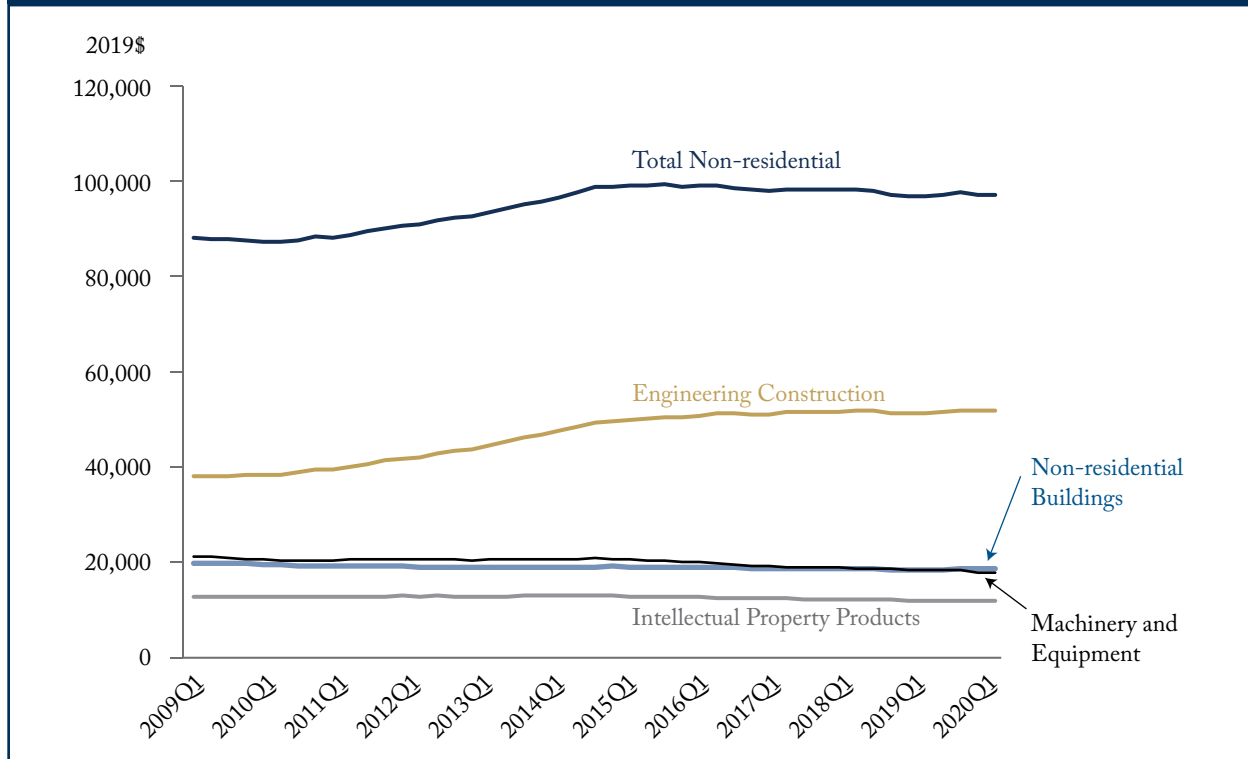
All levels of Canadian government can help improve investment performance. Better infrastructure, more competitive tax rates and growth-friendly tax provisions, internal and international trade liberalization and a smart balance between measures to protect health and promote economic activity in response to the COVID-19 pandemic could all help Canadian workers get the tools they need to compete and prosper.

## Canada's Investment per Available Worker: The Numbers

Canada's stock of capital is critical to Canadian workers' ability to produce goods and services, earn incomes and compete against their counterparts abroad. Non-residential buildings and engineering structures, machinery and equipment and IP products are all tools that make workers more productive and competitive. For an opening view of recent developments – not an encouraging one – Figure 1 shows the four categories of business capital for which Statistics Canada calculates stocks since these series began a little more than a decade ago.<sup>2</sup> To facilitate comparison over time and to highlight the importance of this capital for equipping workers, the figure divides aggregate stocks by Canada's labour force to provide per-available-worker measures.<sup>3</sup>

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- 1 The idea that capital accumulation is a key driver of economic growth goes back centuries. A key contribution to modelling it formally, showing how a rising stock of capital expands output and output per worker, is Solow (1956). Sala-i-Martin (1997) and Caselli and Feyrer (2007) provide key investigations of the correlation between growth and investment at the national level. We would get closer to the measures that economic theory suggests matter for growth of output, incomes and productivity if we could make international comparisons of levels and changes in the stock of non-human capital net of depreciation – and, ideally, if we had measures of human capital that incorporated education, workplace skills and other attributes. Unfortunately, the relevant measures of the stock of non-human capital are incomplete and not very timely, and more comprehensive measures of human capital do not exist.
  - 2 Governments also invest in important infrastructure. We focus on business investment because it has met a market test, which justifies a presumption that the investment will raise productivity and earnings.
  - 3 Using the labour force as a denominator is better than using the population of labour-force age because demographic and other factors affect labour force participation over time and vary from country to country, both of which matter for the international comparisons we make later in this E-Brief. Although employment provides straightforward per-worker measures, employment varies more with the economic cycle than does the labour force, with the recent COVID-related plunge in employment providing a stark example of how capital per worker can increase temporarily in a way that tells us little about longer-term productivity and competitiveness. We use the total labour force because capital invested by business generates the incomes that support both private-sector and public-sector workers, and facilitates international comparisons (different jurisdictions classify private- and public-sector workers differently).

Figure 1: Stocks of Business Capital per Available Worker, by Type, Canada, 2009–20



Note: We update capital stock in 2012 dollars to 2019 dollars using price indexes calculated from nominal and constant-dollar values. The labour force in the second quarter of 2020 is the average of the first- and third-quarter figures, to reduce the distortion of the COVID-19 crisis in the spring.

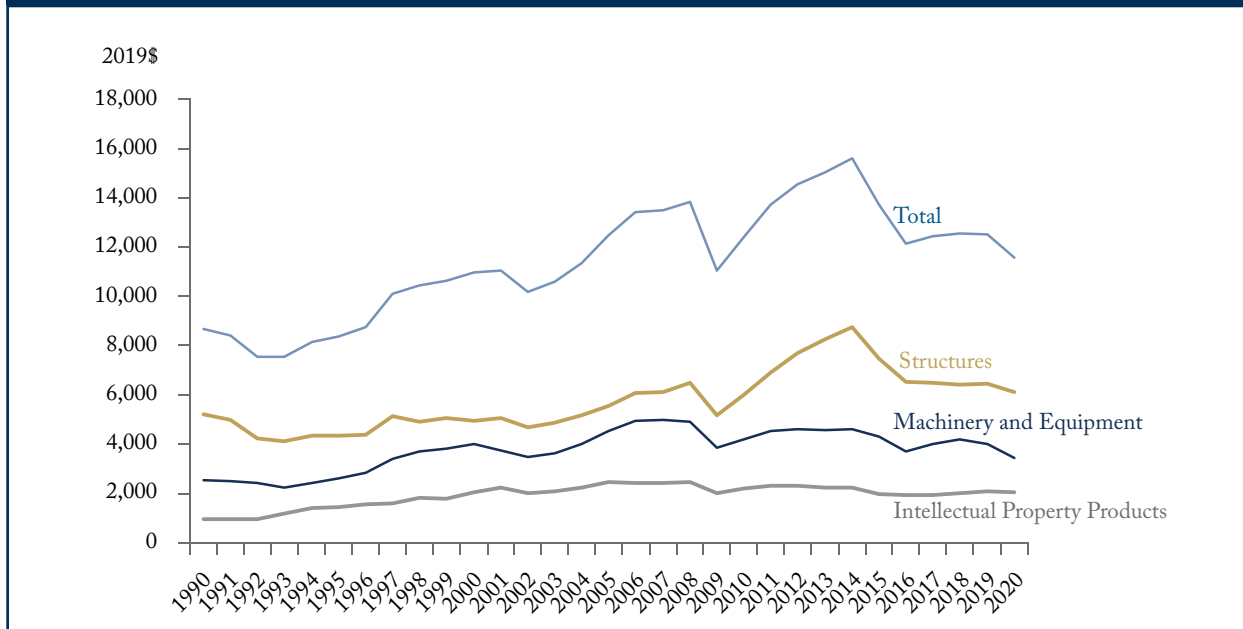
Sources: Authors' calculations based on Statistics Canada, table 34-10-0163-01, Flows and stocks of fixed non-residential and residential capital, by sector and asset; and Statistics Canada, table 14-10-0287-01, Labour force characteristics, monthly, seasonally adjusted and trend-cycle.

These lines tell a troubling story. Engineering construction was the only type of business capital that grew faster than the labour force until mid-decade, while other types simply kept pace. Since mid-decade, engineering construction has kept pace with the labour force, while other types have grown more slowly. Overall, the stock of business capital per available worker in Canada has been falling for the past five years.

Ideally, we could compare these capital stock figures over longer periods and against similar amounts per available worker abroad. Because such figures exist in Canada only since 2009 and are not available for many other countries, we move next to an important proxy that has been measured for longer and in more places: gross business investment. Figure 2 shows the Canadian numbers for the three types tracked by Statistics Canada and most other national statistical agencies: non-residential structures (both buildings and engineering), machinery and equipment and IP products since 1990.

The gross investment figures add some detail to the story told by the net capital stock figures. The key trends are visible in both: relatively strong investment in non-residential structures before mid-decade, partly reflecting a buoyant natural resources sector, but less impressive performances in machinery and equipment and IP

**Figure 2: Gross Business Investment per Available Worker, by Type, Canada, 1990-2020**



Note: 2020 figures reflect actual investment data up to the third quarter; fourth-quarter figures are estimates using growth rates from Statistics Canada's annual survey of business expectations for capital and repair expenditure. The figures for non-residential structures and machinery and equipment in 2019 are 3.0 percent and 2.4 percent (annual rates), respectively. Investment in IP products is assumed to grow at the same rate as investment in machinery and equipment: the correlation between these two from 1991 to 2018 is 90 percent.

Sources: Authors' calculations based on Statistics Canada, table 36-10-0104-01, Gross domestic product, expenditure-based, Canada, quarterly; Table 34-10-0038-01 Capital and repair expenditures, non-residential tangible assets, by type of ownership and geography; and Statistics Canada, table 14-10-0287-01, Labour force characteristics, monthly, seasonally adjusted and trend-cycle.

products. After mid-decade, we see flat per-available-worker investment in IP products and declines in the other two types. Summing across the three types, per-available-worker investment in real terms in Canada in 2020 seems likely to come in one-fourth below its 2014 peak and barely ahead of its trough after the 2008–9 slump.

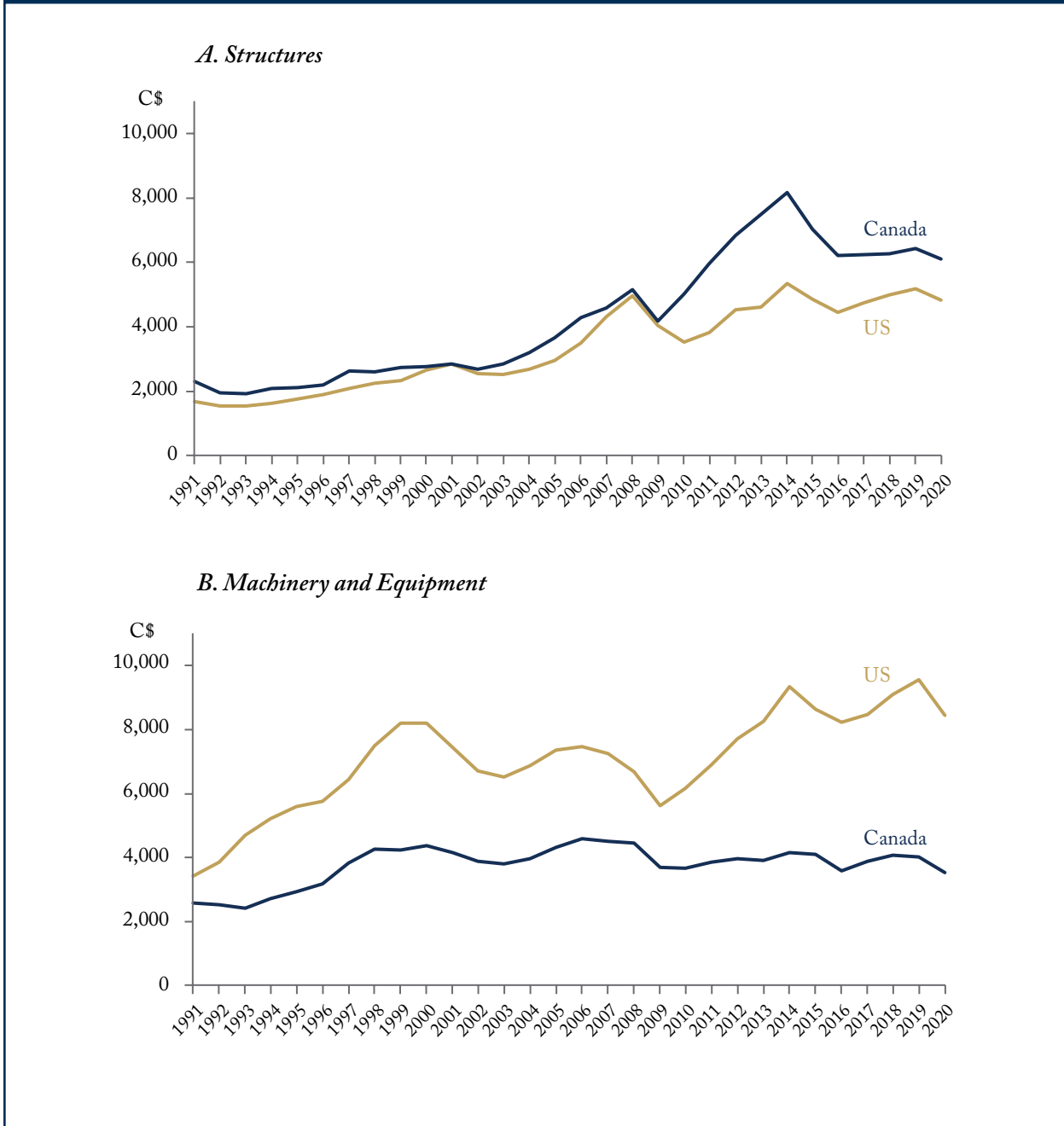
## Canada's Performance against Competitors Abroad

Comparisons of per-available-worker investment levels and trends between Canada and the United States and with other OECD countries prefigure whether Canada is on a path toward higher capital intensity, higher productivity and higher wages or toward lower capital intensity, lower productivity and lower wages.

### Canada versus the United States

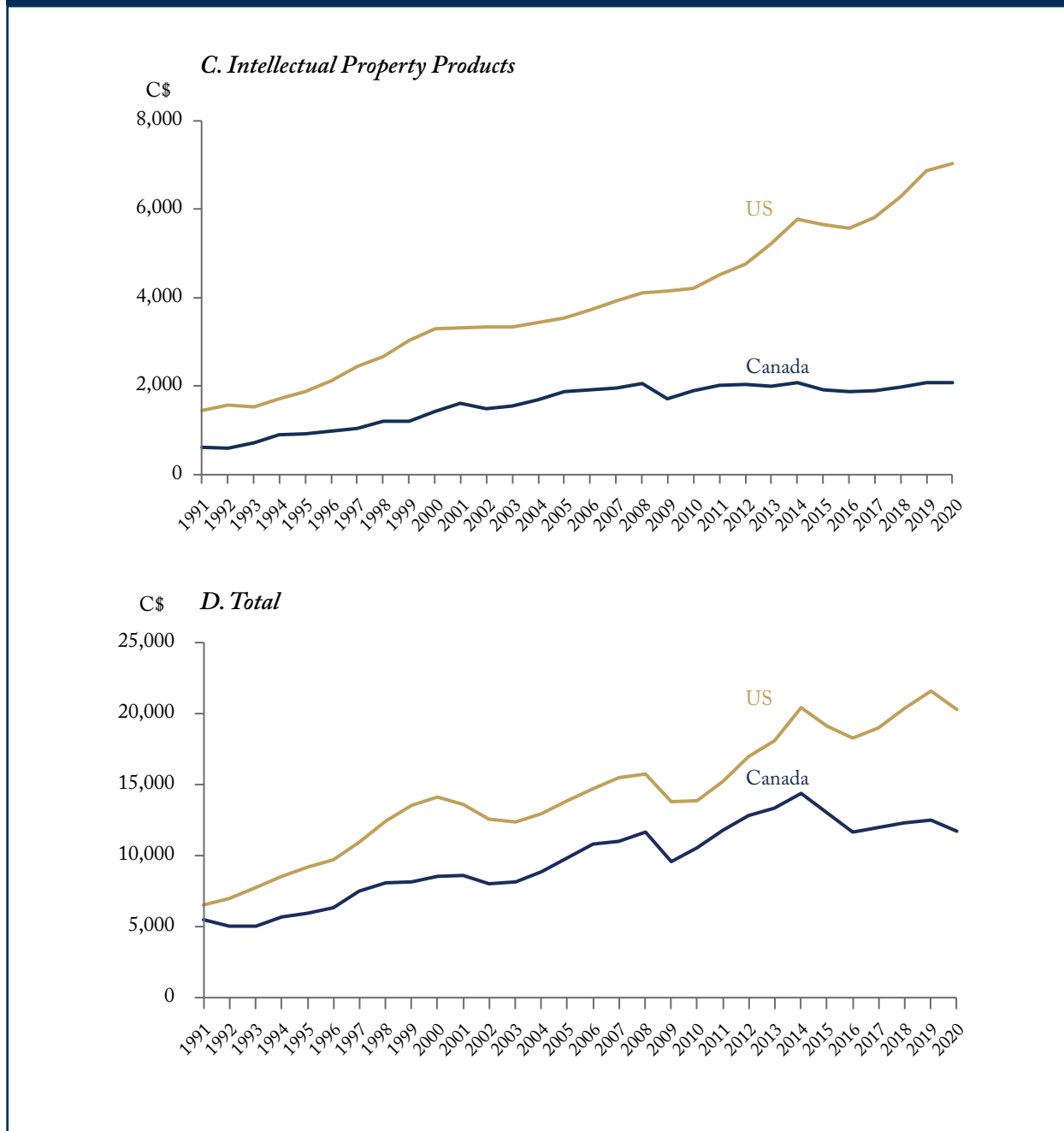
Because Canada and the United States collect similar data on capital investment, and because Statistics Canada takes particular care to compare Canadian to US prices, we can measure investment per available worker in the two countries with relatively high confidence, as shown in Figure 3, panels A through D. Here, we converted the

**Figure 3: Investment per Available Worker, Canada and the United States, Adjusted for Purchasing Power, 1991–2020**



Sources: Authors' calculations based on Statistics Canada, table 36-10-0104-01, Gross domestic product, expenditure-based, Canada, quarterly; Statistics Canada, table 14-10-0287-01, Labour force characteristics, monthly, seasonally adjusted and trend-cycle; Statistics Canada, Table 36-10-0367-01, Ratio of real consumption per capita in the United States compared with Canada, by expenditure category, on an International Comparison Program Classification basis; United States, Bureau of Economic Analysis, Private Fixed Investment: Nonresidential: Structures [B009RC1Q027SBEA], Gross Private Domestic Investment: Fixed Investment: Nonresidential: Equipment [Y033RC1Q027SBEA], and Gross Private Domestic Investment: Fixed Investment: Nonresidential: Intellectual Property Products [Y001RC1Q027SBEA]. All data are as of 27 January 2021.

Figure 3: Continued



Sources: Authors' calculations based on Statistics Canada, table 36-10-0104-01, Gross domestic product, expenditure-based, Canada, quarterly; Statistics Canada, table 14-10-0287-01, Labour force characteristics, monthly, seasonally adjusted and trend-cycle; Statistics Canada, Table 36-10-0367-01, Ratio of real consumption per capita in the United States compared with Canada, by expenditure category, on an International Comparison Program Classification basis; United States, Bureau of Economic Analysis, Private Fixed Investment: Nonresidential: Structures [B009RC1Q027SBEA], Gross Private Domestic Investment: Fixed Investment: Nonresidential: Equipment [Y033RC1Q027SBEA], and Gross Private Domestic Investment: Fixed Investment: Nonresidential: Intellectual Property Products [Y001RC1Q027SBEA]. All data are as of 27 January 2021.

different types of capital investment into Canadian dollars using Statistics Canada's measures of relative price levels of capital equipment to adjust for differences in purchasing power in the two countries.<sup>4</sup> This adjustment should help capture how much bang businesses get per buck spent on structures, machinery and equipment or IP products on either side of the border.<sup>5</sup>

As Figure 3, panel A shows, Canada has an edge in investment in structures. Canadian businesses, with their relatively greater focus on natural resources, have tended to invest more per worker in structures than those in the United States, notably after the 2008–9 slump, as Canada's resources sector benefited from buoyant demand abroad. The difference shrank after the middle of the 2010s, however, as Canada's per-available-worker investment in structures stagnated, while the counterpart US measure rebounded – reflecting in large degree the relatively robust performance of the US energy sector at a time when Canada's faced policy-related obstacles.

The comparison in machinery and equipment investment (panel B) is much less favourable to Canada. US businesses typically spend more per available worker on such investment, and the gap has widened over the past decade. The gap in 2020 likely will be more than \$3,500.

The IP products gap (panel C) is worse yet. Since the mid-2000s, Canadian businesses' spending on these products has been stuck at around \$2,000 per available worker, while the US figure has risen from around \$3,000 to almost \$7,000. Some of this difference reflects slumping mineral exploration expenditures in Canada, where the resources sector has struggled. To the extent it reflects greater use by Canadian businesses of information technology services hosted in the United States, its implications for productivity are ambiguous: that might be simply a smart business decision on the Canadian side, or it might reflect Canada's lack of competitiveness in cutting-edge services.

Looking across all three types of investment reveals a troubling picture with respect to comparisons between Canada and the United States. Business investment per available worker in the United States exceeded that in Canada by a widening margin through the 1990s; although the gap narrowed in the 2000s, it has widened dramatically in the past half-decade.

Asking how many cents of new investment per available worker in Canada occurs for every dollar of new investment per available worker in the United States yields a summary comparative measure. We show our measure of investment in Canada per dollar of its equivalent in the United States, in total and in each investment category, in Figure 4.

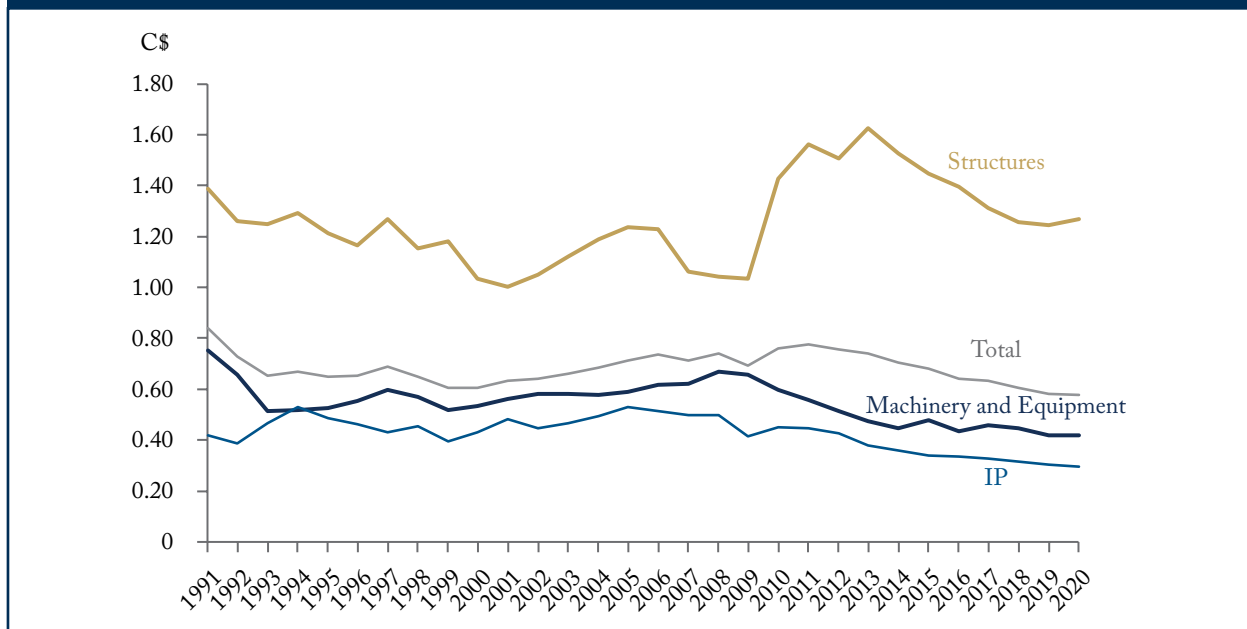
Canada's relatively robust rate of investment in structures stands out in this figure, with Canadian workers benefiting from more additions of this type of capital throughout the period. The surge to the 2013 peak – when each available Canadian worker was getting about \$1.70 for every dollar of new structures enjoyed by her or his US counterpart – is striking. So, unfortunately, is the subsequent decline to about \$1.25.

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4 The figures for purchasing power parity in construction, machinery and equipment, and other investment products in 2020 are 82 percent, 85 percent and 96 percent, respectively; Statistics Canada, Table 36-10-0367-01, Ratio of real consumption per capita in the United States compared with Canada, by expenditure category, on an International Comparison Program Classification basis.

5 Investment goods tend to be less expensive overall in the United States than in Canada, so converting US dollars to Canadian dollars using the exchange rate alone would understate the return US companies get per dollar of investment.

**Figure 4: Investment per Available Worker in Canada, for Every Dollar of Investment per Available Worker in the United States, by Type of Investment, 1991–2020**



Sources: Authors' calculations based on Statistics Canada, table 36-10-0104-01, Gross domestic product, expenditure-based, Canada, quarterly; Statistics Canada, table 14-10-0287-01, Labour force characteristics, monthly, seasonally adjusted and trend-cycle; Table 36-10-0367-01, Ratio of real consumption per capita in the United States compared with Canada, by expenditure category, on an International Comparison Program Classification basis; United States, Bureau of Economic Analysis, Private Fixed Investment: Nonresidential: Structures [B009RC1Q027SBEA], Gross Private Domestic Investment: Fixed Investment: Nonresidential: Equipment [Y033RC1Q027SBEA], and Gross Private Domestic Investment: Fixed Investment: Nonresidential: Intellectual Property Products [Y001RC1Q027SBEA]. Data are as of 27 January 2021.

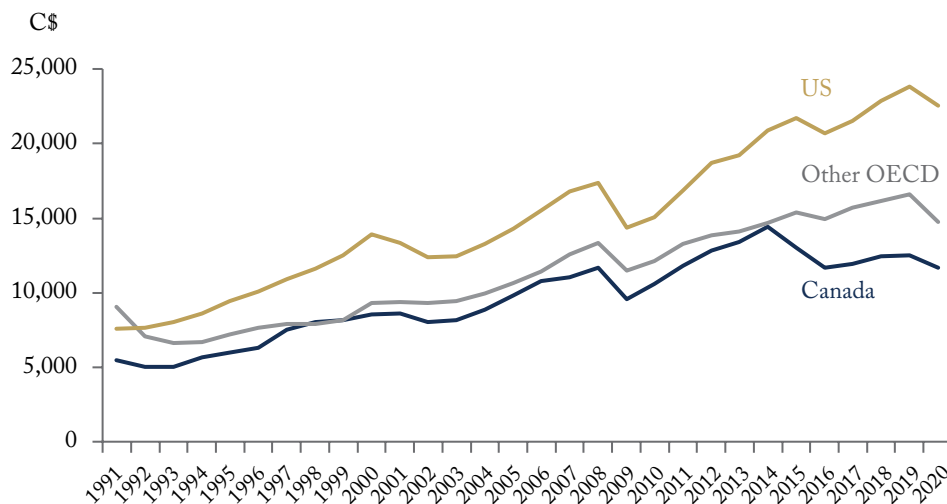
The more consistently disheartening stories are in machinery and equipment and IP products. As Figure 4 shows, for every dollar of new machinery and equipment per available worker in the United States, Canadians improved from fewer than 60 cents around the turn of the century to close to 70 cents around the time of the 2008–9 crisis and slump. Canada's relative rate of machinery and equipment investment has dropped since then, however, and recently stood near 40 cents. The situation with IP products is worse, with a steadily declining trend since the mid-2000s, to the point where the average Canadian available worker seems likely to enjoy only 29 cents of new investment in IP products in 2020 for every dollar enjoyed by the average US available worker. Add the three types of capital together, and new investment per available worker in Canada, adjusted for purchasing power, is now only about 58 cents for every dollar of investment per available worker in the United States – lower than at any point since the beginning of the 1990s.

## Canada versus the OECD

How does Canada compare with other developed countries? Not all OECD countries break down business investment by type the way Canada and the United States do, and not all measure IP products the same way, so we are obliged to use aggregate business investment with less confidence that we are comparing like with like. No type-specific measures of relative prices exist, so the bang-per-buck adjustment is less precise: instead, we



**Figure 5: Business Investment per Available Worker in Canada, Other OECD and the United States, 1991–2020**



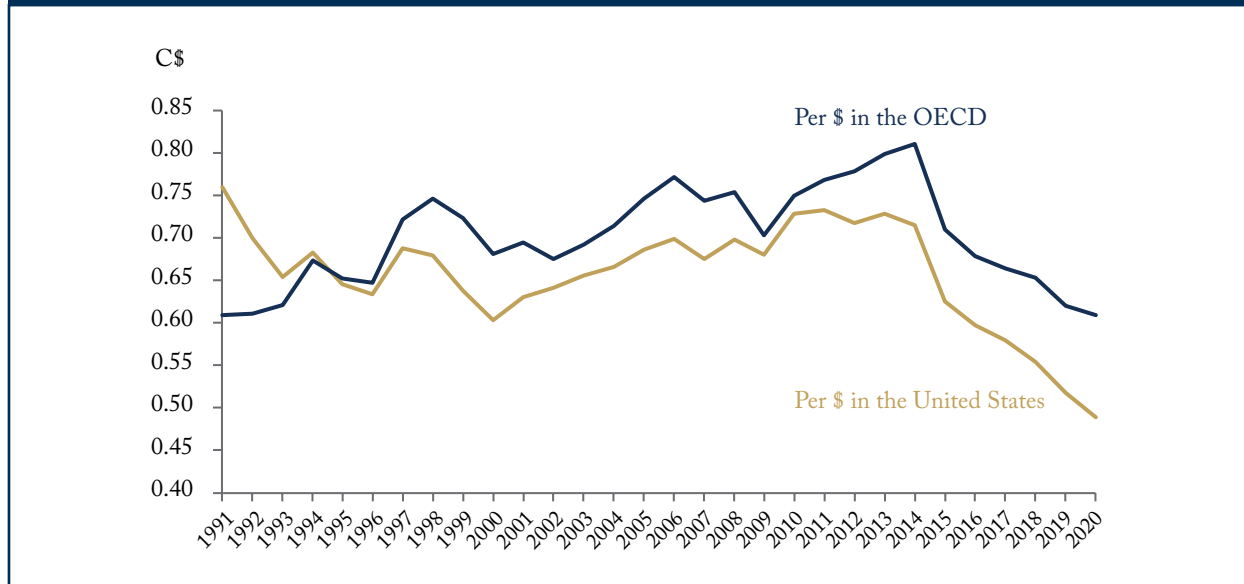
Sources: Authors' calculations based on data from Statistics Canada, table 36-10-0104-01, "Gross domestic product, expenditure-based, Canada, quarterly"; Statistics Canada, table 14-10-0287-01, Labour force characteristics, monthly, seasonally adjusted and trend-cycle; *OECD Economic Outlook* 107; United States, Bureau of Economic Analysis, Private Fixed Investment: Nonresidential: Structures [B009RC1Q027SBEA], Gross Private Domestic Investment: Fixed Investment: Nonresidential: Equipment [Y033RC1Q027SBEA], and Gross Private Domestic Investment: Fixed Investment: Nonresidential: Intellectual Property Products [Y001RC1Q027SBEA], from the U.S. Bureau of Economic Analysis, and *OECD Economic Outlook* 107.

use purchasing-power-adjusted exchange rates, benchmarked to relative prices of investment goods in 2008. For consistency's sake, we use the same OECD measures for the United States as well, which means that the per-available worker numbers in Canadian dollars are not identical to those in our Canadian-US comparison. But the big picture – notably, the story of Canadian underperformance – is consistent (Figure 5).

Investment per available worker in other OECD countries considered together typically has been less robust than in the United States, but more robust than in Canada – except for the period earlier in the 2010s when Canada's resources sector was booming and many other advanced economies were still suffering from the lingering effects of the 2008–9 crisis and slump. Lately, the gap between Canada and other OECD countries has been unprecedentedly wide: businesses in other OECD countries are likely to add more than \$16,000 of new capital per available worker this year, \$4,000 above Canada's level. Across the entire OECD, the per-available-worker tally will be around \$19,000, some \$7,000 more than in Canada.

Here, too, Canada's relative performance can be highlighted by showing Canadian investment per available worker against the comparable figures abroad. Figure 6 shows how much new capital each available worker in Canada has received compared with counterparts in the United States and the OECD as a whole since 1991.

**Figure 6: Investment per Available Worker in Canada for Every Dollar of Investment per Available Worker in the OECD, 1991–2020**



Source: Authors' calculations based on data from OECD Economic Outlook 107.

A long-standing gap between investment rates in Canada and those abroad narrowed between the late 1990s and the mid-2000s. For every dollar of investment enjoyed by available workers in the OECD as a whole, their Canadian counterparts enjoyed about 75 cents in the early 2000s. By the middle of the past decade, the average available worker in Canada was receiving somewhat more: 81 cents. Now, however, Canadian workers are enjoying barely more than 60 cents of new capital for every dollar spent on their OECD counterparts.

## Equipping Canadian Workers Better

Even before the COVID-19 pandemic hammered business investment in Canada, rates of capital formation in this country had been lagging comparable measures abroad for several years. Policymakers cannot influence all the factors affecting the environment for business investment in Canada, but they can make progress on several important ones.

Lack of demand during this recession matters, but Canada seems to be suffering worse than other countries. Dealing effectively with the pandemic, with more testing, targeted restrictions, and rapid vaccine rollout, rather than broader-based shutdowns of the economy, would help.

Longer term, lack of investment in infrastructure – particularly energy transportation infrastructure – directly hurts the fossil fuels sector, already facing vigorous competition from a better-favoured US sector, and indirectly hurts industries that supply it. Taxation is a suspect in Canada's lacklustre performance: in Canada, business property taxes are high from coast to coast (Found and Tomlinson 2017) and US corporate tax changes have made investment more attractive south of the border (McKenzie and Smart 2019). Regulations that blunt competitive pressure and tax/subsidy programs that discourage business growth also need reviewing. Trade

uncertainty, notably with respect to the United States and China, is likely inducing businesses not to invest, or to invest in the United States in preference to Canada. A fragmented internal Canadian market is also a disincentive to investment.<sup>6</sup> Access to funds might be an issue, especially for small and medium-sized enterprises (Kronick and Omran 2019), and measures to foster asset-based finance (Powell 2020) and scaling-oriented private equity (Lortie 2019) could help.

After improving against international competitors during the 2000s and early in the 2010s, business investment per available worker in Canada slipped badly after 2014, and appears to have dropped further during the COVID-19 crisis. This weakness has not just accentuated Canada's excessive dependence on consumption to support economic activity in the present; it also means that Canadian workers will have less capital – less non-residential building and engineering, less machinery and equipment and less in the way of IP products – with which to produce goods and services, earn incomes and fund public services in the future.

The prospect that Canadians will find themselves increasingly relegated to lower-value-added activities relative to workers in the United States and elsewhere, who are raising their productivity and earnings faster, should spur Canadian policymakers to action on many fronts: infrastructure investments, lower and less distorting taxes, and incentives oriented toward growth and competition at home and abroad. Canadian workers need better tools. Policymakers must help provide them.

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6 Alvarez, Krznar, and Tombe (2019) show that the average non-geographical trade barrier is about 20 percent, and that fully liberalizing interprovincial trade would increase national gross domestic product by 4 percent.

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