Attracting FDI Toward Canada's Digital Economy: COVID-19 and Beyond

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Research by

The Information and Communications Technology Council

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Preface

The Information and Communications Technology Council (ICTC) is a not-for-profit, national centre of expertise for strengthening Canada's digital advantage in a global economy. Through trusted research, practical policy advice, and creative capacity-building programs, ICTC fosters globally competitive Canadian industries enabled by innovative and diverse digital talent. In partnership with an expansive network of industry leaders, academic partners, and policymakers from across Canada, ICTC has empowered a robust and inclusive digital economy for over 30 years.

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Abstract

This study discusses the impact of the COVID-19 pandemic and prominent trends in Canada's ability to attract foreign direct investment (FDI) toward its digital economy. Such trends include stricter environmental regulations, the bottleneck in immigration, the OECD-led international tax reform, and accelerated digital adoption across industries. The study relies on comprehensive research and interviews with industry leaders and subject matter experts. It details the opportunities and challenges faced by Canada's digital sector amid the pandemic, and showcases investment opportunities across digital industries, such as the green economy and health tech. A strengths, weaknesses, opportunities, and threats (SWOT) analysis is also applied to Canada's ability to attract FDI toward its digital economy.

Key terms:

Foreign Direct Investment (FDI)

International Tax Reform

Clean Tech

Clean Energy

Health Tech

Artificial Intelligence

Digital Nomad

Agtech

Venture Capital

COVID-19

Global Supply Chains

Climate Change

Remote Working

Digital Transformation

Digitalization

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Executive Summary

The COVID-19 pandemic and related lockdowns around the world have disrupted global healthcare and economic production. Never-before-seen shifts in global value chains took place, creating a highly uncertain business and investment environment. Amid these trends and even during the height of the pandemic, Canada's digital economy remained resilient.[1] Now, more than two and a half years since the pandemic started, Canada's digital economy is leading the charge.

Foreign Direct Investment (FDI) is recognized by governments and the business community as an important contributor to prosperity and economic wellbeing. FDI contributes to sustainable economic growth through technology transfer, increased competition in local markets, and by facilitating regional and global supply chain integration of small and medium sized enterprises (SMEs). During the early days of pandemic, global FDI flows shrank, but they quickly and significantly rebounded. In 2021, global FDI was up 77% compared to 2020 and even surpassed pre-COVID-19 levels. Regionally, North America saw one of the highest annual growth rates in FDI inflows. FDI inflows to North America, Asia, and EU increased by 120%, 18%, and 8% respectively. This significant growth of FDI inflows is largely attributed to the recovery of the Information and Communication Technology (ICT) sector.[2] Foreign direct investment in Canada saw similarly impressive growth in 2021, with an annual gross inflow of over $75 billion—a level last surpassed in 2007[3]—and second only to the U.S. among OECD (Organization for Economic Co-operation and Development) member countries.[4]

1 Akshay Kotak and Maryna Ivus, "Onwards and Upwards - Digital Talent Outlook 2025," Information and Communications Technology Council, August 26, 2021, https://www.ictc-ctic.ca/wp-content/uploads/2021/08/digital-talent-outlook-for-2025.pdf

2 "Global Investment Trends Monitor," UNCTAD, No. 40, January 2022, https://unctad.org/webflyer/global-investment-trend-monitor-no-40

3 Statistics Canada. Table 36-10-0025-01 Balance of international payments, flows of Canadian direct investment abroad and foreign direct investment in Canada, quarterly (x 1,000,000).

4 OECD (2022), FDI flows (indicator). doi: 10.1787/99f6e393-en

Compared to previous economic crises, COVID-19 caused much more severe damage to the overall Canadian economy. Year-over-year, Canada's GDP dropped 5.2% in 2020 compared to the 3.2% decline of the 2008 financial crisis. At the same time, COVID-related lockdown measures led to disruptions in global supply chains, and both the goods-producing and service-producing sectors registered record declines in 2020—a contraction of 6.1%, and 4.9%, respectively. Although GDP staged a comeback and posted 4.6% growth a year later in 2021, the digital economy remained resilient and even thrived throughout the pandemic. The ICT sector, the backbone of the digital economy, expanded by 1.6% in 2020 and 4.7% in 2021. Sectors that have adopted digital technologies and networks more aggressively (digitally intensive sectors) experienced much smaller (if any) negative impacts from the pandemic and recovered faster compared to non-digitally intensive sectors.[5]

The digital economy and, in particular, the ICT sector weathered the pandemic better than most. The rise in demand for digital infrastructure and services led to an increased share for greenfield projects and capital expenditures (CapEx) in the Software and IT Services sector. Moreover, Canada's Revealed Comparative Advantage (RCA) index in the Software & IT services sector remained the highest among other sectors, reaching 3.99 points in 2021. This highlights the strength and competitiveness of the sector and its importance for FDI. The broader digital economy is well positioned to benefit from accelerated digitalization across industries, a key factor that can enable Canada to attract both public and private investments.

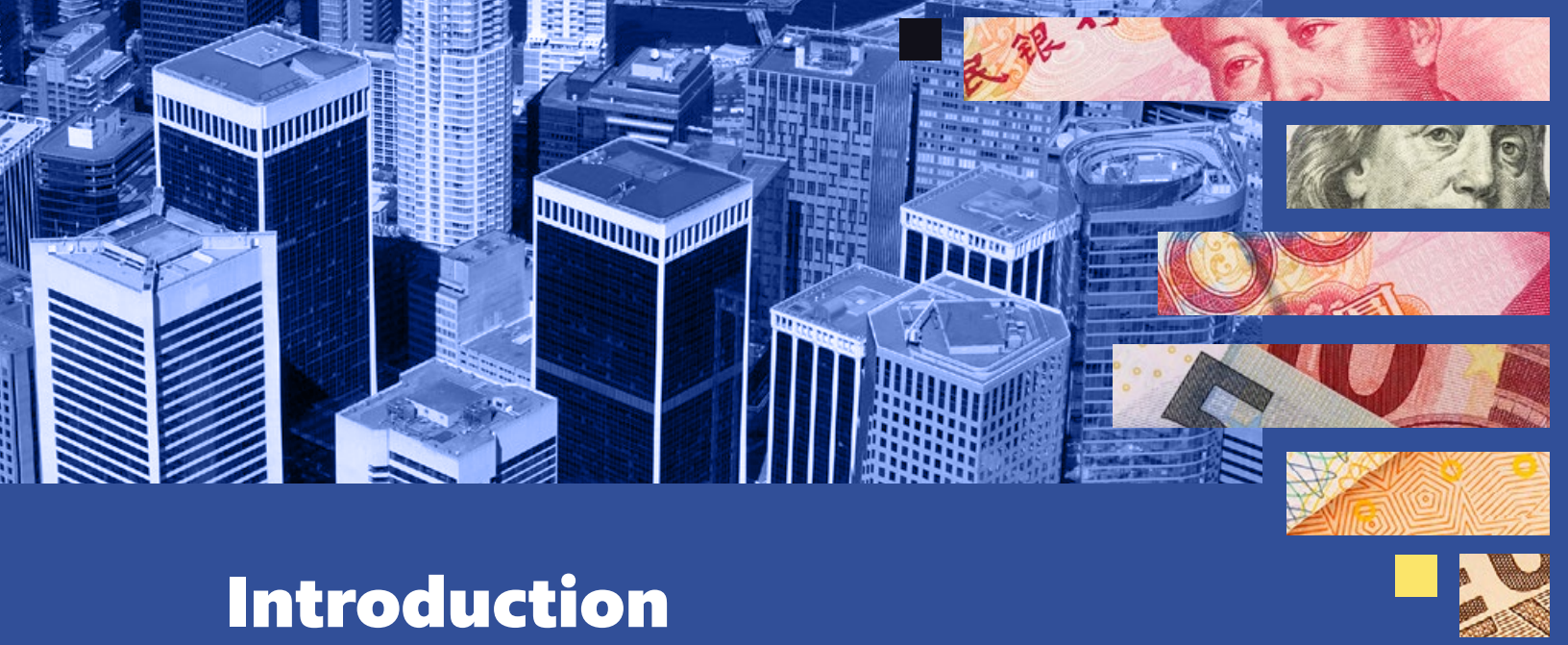
The pandemic-accelerated digitalization across all industries has also created significant market growth potential, increasing Canada's ability to attract FDI toward its digital economy. Yet, unlocking such market growth requires more robust and accessible digital infrastructure, which by itself is an important pull factor for FDI attraction.

5 Huju Liu, "Economic Performance Associated with Digitalization in Canada over the Past Two Decades," Statistics Canada, accessed September 23, 2021, https://www150.statcan.gc.ca/n1/pub/36-28-0001/2021002/article/00001-eng.htm

Financial infrastructure and policy also play an essential role, and developments like the OECD-led global tax reform can provide immense FDI opportunities for Canada's digital economy—both as an investment attractor and business catalyst. Such reforms have the power to attract tech giants to Canada's shores while also continuing to support homegrown startups.

Although some barriers exist, like a backlog in immigration and general labour market tightness in several sectors (which puts upward pressure on wages and downward pressure on labour productivity), the pandemic and other prominent trends have also caused notable disruptions in business operations and economic activities, creating immense investment opportunities across digital industries, including health tech, green and agri-tech, and artificial intelligence (AI). Lastly, the global commitment to address environmental challenges and implement stricter environmental regulations has been combined with supportive government policies that provide both market certainties and financial incentives to foreign investors. Together, these have a positive impact on Canada's ability to attract FDI to the digital economy, while contributing to a greener, cleaner, and more sustainable future.

COVID-19 caused shockwaves across the global economy, and Canada was not spared the landslide of economic downturn and job loss that impacted countries around the world. However, as the nation emerges from the pandemic and countries around the world enter recovery and rebound, investment will play a central role. Canada's appeal attracts millions of visitors each year. Its stable political system, high quality of life, and plethora of natural beauty are all factors that make Canada a top travel destination and a highly desirable new home for people from around the world. Coupled with a growing digital economy, Canada is presented with an unprecedented opportunity to attract FDI, enabling it to truly build back better.



Introduction

COVID-19 is not just a global public health crisis that has caused a global economic recession; it has also altered how people live and businesses operate. As analysts still struggle to capture and measure the evolving socio-economic changes caused by the pandemic, one thing has become clear for policymakers and business leaders around the world: in the next phase of economic recovery, countries and jurisdictions will need international capital to revive their economies and relieve the pressure of overburdened fiscal and monetary policies. At the same time, firms will be competing for international capital to get their business back on their feet, while leveraging further digitalization to capture productivity gains.[6]

To ensure a country's competitiveness in attracting FDI, policymakers and the business community must understand how COVID-19 and other prominent trends shape the global economy and present opportunities and challenges. This study presents insights from a robust literature review and analysis of key datasets, as well as 41 in-depth interviews with potential investors, investment promotion agencies (IPAs), and other subject matter experts from around the world to better understand these realities and paint a clear picture of Canada's ability to attract high-value FDI for the digital economy.

6 Ibid.

Section I of this report discusses the economic impact of COVID-19 on the Canadian economy and all industries. This overview is critical to gain an overall understanding of the pandemic's impact and serves as a comparison for the digital economy.

Section II discusses how Canada fared in attracting FDI amid the pandemic and analyzes how prominent trends affect Canada's ability to attract FDI within the digital economy. Developments like the global commitment to reduce greenhouse gas (GHG) emissions, the temporary plunge in international immigration, the OECD global tax reform, and accelerated digitalization are discussed.

Section III combines the analysis of exogenous forces impacting digital economy FDI attraction in Canada with key insights from business leaders about Canada's opportunities and challenges presented by the pandemic and beyond. This report concludes with an overview of Canada's pathway forward for attracting high-value and sustainable FDI in the digital economy and includes a SWOT (strengths, weaknesses, opportunities, and threats) analysis for Candain digital economy FDI.

SECTION I

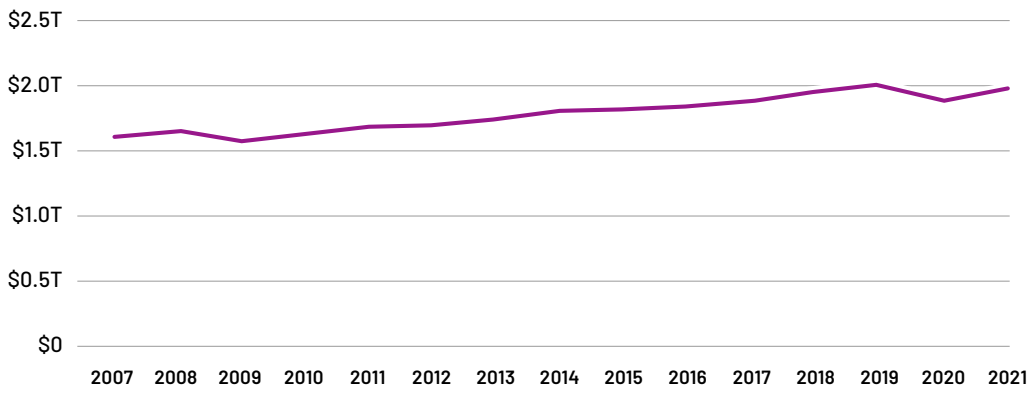
The Impact of the COVID-19 Pandemic on the Canadian Economy

Periods of economic downturn are not new experiences for Canadians. In the last 15 years, the Canadian economy experienced three economic slowdowns: the financial crisis of 2008-2009, the oil price crash of 2014-2015, and the COVID-19 pandemic. Today, Canada is entering another period of economic slowdown, with an expectation of a recession starting in 2023. However, compared to the previous economic crises, COVID-19 has caused significantly more damage to the overall economy, labour market, and investment. Year-over-year, Canada's GDP dropped 5.2% in 2020, compared to a 3.2% decline during the 2008 financial crisis and an 0.8% growth during the oil price bust of 2014.[7] (See Chart 1.)

Yet, owing to effective policy interventions, the Canadian economy started to recover in the third quarter of 2020, and in 2021, strong GDP growth of 4.6% was recorded.[8] In 2021, real GDP reached $1.97 trillion, which remains only slightly below pre-pandemic levels (see Chart 1).[9] That year, the GDP of goods-producing industries increased by 4.4%, while the GDP of service-producing industries achieved 5% growth.

CHART 1

Total Canadian GDP Over the Past 15 Years



Sources: Statistics Canada. ICTC.

The economic downturn caused by COVID-19 was not shared evenly across sectors and industries. Due to lockdown measures and resulting disruptions in global supply chains in 2020, the GDP of goods-producing industries contracted by 6.1%, with manufacturing GDP alone shrinking by 9.7% (or $19 billion), compared to 2019.[10]

7 ICTC calculation. Data sources: Statistics Canada. Table: 36-10-0434-06 Gross domestic product (GDP) at basic prices, by industry, annual average, industry detail (x 1,000,000); and Table 36-10-0449-01 Gross domestic product (GDP) at basic prices, by industry, quarterly average (x 1,000,000). Data is seasonally adjusted at annual rates.

8 "Gross domestic product, income and expenditure, fourth quarter 2021" Daily, Statistics Canada, March, 2022, https://www150.statcan.gc.ca/n1/daily-quotidien/220301/dq220301a-eng.htm

9 Ibid.

10 Ibid.

Likewise, the GDP of service-producing industries dropped by 4.8% in 2020, with high-contact areas like arts, entertainment and recreation, and accommodation and food services seeing the largest declines, totalling 41% and 33.5%, respectively.[11] Comparatively, finance and insurance expanded with an impressive growth rate of 4.6% in 2020,[12] largely led by increased savings[13] and health and safety concerns during the pandemic (See Chart 2).

Compared with the last two economic crises, COVID-19 brought on much more severe economic damages to the service industries, with the exception of finance and insurance (See Chart 2). Interestingly, real estate was the only industry to grow throughout all three economic crises. This is credited to expansionary monetary policies driving increased lending and surging investment in the Canadian housing market.

CHART 2

Industry Performance During Economic Downturns

GDP percentage changes

Industries	2008–2009	2014–2015	2019–2020	2020–2021
All industries	-3.2%	0.8%	-5.1%	4.8%
Agriculture, forestry, fishing and hunting	-5.1%	4.4%	3.3%	-6.5%
Mining, quarrying, and oil and gas extraction	-10.5%	-2.8%	-7.6%	6.3%
Utilities	-4.8%	0.5%	-2.4%	-1.4%
Construction	-6.1%	-2.3%	-2.1%	5.7%
Manufacturing	-13.8%	0.6%	-9.7%	4.4%
Wholesale trade	-6.8%	-3.3%	-2.5%	4.3%
Retail trade	-2.4%	-0.1%	-3.3%	7.1%
Transportation and warehousing	-3.6%	2.6%	-19.5%	1.4%
Information and cultural industries	-1.3%	2.1%	-2.1%	3.8%
Finance and insurance	-1.0%	4.9%	4.6%	4.1%
Real estate and rental and leasing	2.8%	3.0%	1.4%	3.5%
Professional, scientific, and technical services	-2.5%	-0.3%	-2.7%	7.0%
Management of companies and enterprises	-0.2%	4.1%	-29.1%	-26.5%
Educational services	1.5%	1.2%	-5.9%	6.1%
Healthcare and social assistance	2.3%	1.4%	-4.5%	7.9%
Arts, entertainment and recreation	-0.5%	1.8%	-41.0%	4.1%
Accommodation and food services	0.7%	2.6%	-33.5%	14.9%
Other services (except public administration)	-1.0%	0.4%	-15.5%	7.8%
Public administration	5.4%	0.6%	-1.4%	4.1%

Sources: Statistics Canada. ICTC.

11 Ibid.

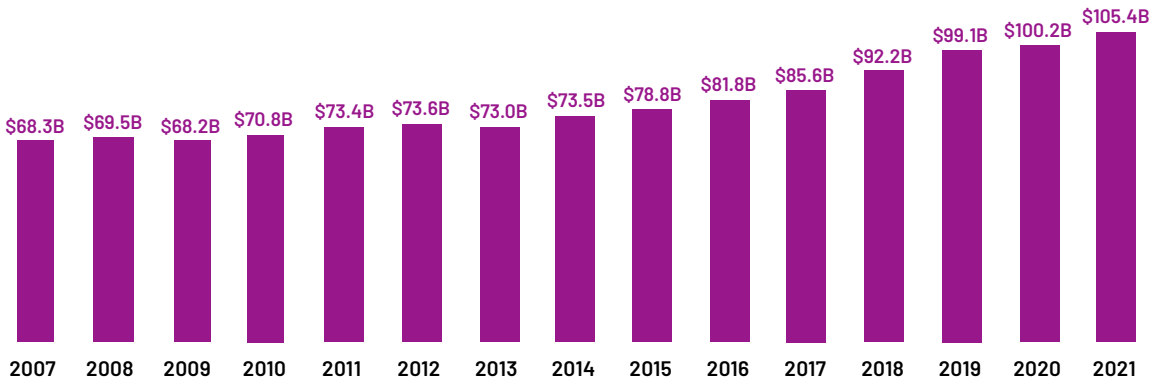
12 Ibid.

13 Bank of Canada, "COVID-19, Savings and Household Spending," accessed August 10, 2021, https://www.bankofcanada.ca/2021/03/covid-19-savings-and-household-spending/

The ICT sector expanded by 1.6% and 4.7% in 2020 and 2021, respectively, despite the pandemic[14] (See Chart 3). However, this growth was not even among ICT subsectors. While the ICT services subsector experienced 2.1% and 4.3% increases in 2020 and 2021 respectively, the ICT manufacturing subsector saw a 12.7% contraction in output in 2020 and 15% growth in 2021.[15] ICT manufacturing saw notable disruptions in global supply chains, with steep declines observed in semiconductor and electronic component manufacturing as well as communications equipment manufacturing.[16]

CHART 3

ICT Sector Expanded Despite the Pandemic



Source: Statistics Canada.

Industries that proactively adopted digital technologies and networks (digitally intensive sectors) experienced smaller negative impacts than their non-digital counterparts during the pandemic. For example, both digitally intensive sectors and non-digitally intensive sectors experienced a decline in GDP and employment in 2020, but employment in the former surpassed 2019 levels by September 2020, and GDP was only 0.9% below its 2019 level. GDP and employment in non-digitally intensive sectors were 5.3% and 7.8% below 2019 levels in 2020.

> *Companies like ours, and like others in the digital economy space, have proven to be extraordinarily resilient. We, fortunately, did not have a single job lost. Digital jobs have proven to be resilient to something like a pandemic, and they are absolutely key to the broader economic recovery.* – VP, ICT company, USA

14 ICTC calculation. Data sources: Statistics Canada. Table: 36-10-0434-06 Gross domestic product (GDP) at basic prices, by industry, annual average, industry detail (x 1,000,000). Data is seasonally adjusted at annual rates.

15 Ibid.

16 Innovation Government of Canada, "Canadian ICT Sector Profile 2020 - Information and Communications Technologies," Reports; Statistical Reports (Innovation, Science and Economic Development Canada, April 17, 2007), https://www.ic.gc.ca/eic/site/ict-tic.nsf/eng/h_it07229.html

17 Huju Liu, "Economic Performance Associated with Digitalization in Canada over the Past Two Decades."

18 Ibid.

19 Ibid.

SECTION II

FDI and the Canadian Digital Economy—The Pandemic's Mark and Other Key Developments

FDI is instrumental to economic development and productivity growth. Through capital investment and technology transfer, FDI propels a country's economy and increases its competitiveness. Furthermore, FDI is a key element in international economic integration because it creates stable and long-lasting links between countries. This is evident in ownership requirements—foreign investors must have minimum 10% of the voting power of a firm in a host country.

As an open and trade-based economy, Canada relies on international capital to sustain its economic growth, which is reflected in its stock of FDI—an amount equivalent to 47% of the country's GDP (2020).[20] Foreign multinationals, an instrumental vertical for FDI, are critical to the Canadian economy. Although less than 1% of companies in Canada are foreign multinational corporations, they provide 12% of employment, 15% of GDP, and 60% of trade in goods and services.[21]

FDI Flows to Canada During Economic Crises

Due to their sensitivity to macroeconomic conditions, FDI inflows to Canada registered significant declines in the recent three economic downturns (See Chart 4). In 2020, Canada's FDI inflows fell by 53.3%.[20] The severity of this one-year decline was only surpassed by the global financial crisis of 2008-2009 when inward FDI dropped by 60.5%.[23] Yet, in 2021, Canada's FDI inflows rebounded by 140.7%, surpassing pre-pandemic levels and reaching $74.8 billion, their highest mark since 2007.[24]

20 See Appendix for technical notes about FDI stock and FDI flows. Data source: Global Affairs of Canada, "State of Trade 2021 - A Closer Look at Foreign Direct Investment (FDI)," GAC, February 2, 2021, https://www.international.gc.ca/transparency-transparence/state-trade-commerce-international/2021.aspx?lang=eng#a2_2

21 Global Affairs of Canada.

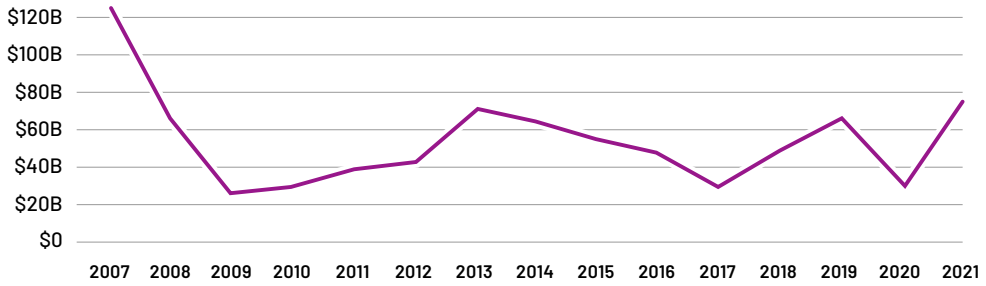
22 ICTC calculation. Statistics Canada. Table 36-10-0025-01 Balance of international payments, flows of Canadian direct investment abroad and foreign direct investment in Canada, quarterly (x 1,000,000).

23 Ibid.

24 Ibid.

CHART 4

FDI Flows Are Sensitive to Macroeconomic Fluctuations



Sources: Statistics Canada. ICTC.

By sector, energy and mining saw the largest contraction in FDI inflows during 2019-2020, followed by manufacturing (See Chart 5).[25] In 2021, however, once FDI inflows recovered, most industries rebounded (except Management of Companies and Enterprises) and outperformed their historical annual averages. The manufacturing sector outperformed its historical annual average by 51%, and the energy and mining sector outpaced its historical average by 70%.[26,27]

CHART 5

The Impact of FDI flows Amid the Pandemic

Sources: Statistics Canada. ICTC.

25 Statistics Canada. Table 36-10-0026-01 Balance of international payments, flows of Canadian direct investment abroad and foreign direct investment in Canada, by North American Industry Classification System (NAICS), quarterly (x 1,000,000).

26 Ibid.

27 K. Curran,"FDI into Canada hits 15-year high," Invest in Canada, 2022, https://www.investcanada.ca/blog/fdi-canada-hits-15-year-high

While the ICT sector weathered the pandemic better than most sectors, its FDI stock contracted in 2020 by over 20%, or $3 billion.[28] This contraction is primarily attributed to the ICT manufacturing subsector, which relies heavily on the export market, which was significantly disrupted by the pandemic. For instance, exports of electronic components and computer equipment decreased the most (a 36% contraction over 2019-2020), and communications equipment exports also fell 19% compared to 2019.[29] Additionally, the ICT manufacturing subsector faced significant headwinds from a global shortage of semiconductors and the implementation of "buy local" policies in major export markets such as the U.S. and France.[30]

Despite the economic downturn, the pandemic had a positive impact on the ICT sector's greenfield projects. The rise in demand for digital infrastructure and services in 2020 and 2021, led to an increased share of greenfield projects in the Software and IT Services sector, at 38% and 36% respectively, compared to 32% in 2019.[31] Capital expenditures (CaPex) in the Software and IT Services increased by 61% to $6.6 billion during 2020, and by 30% to $5.4 billion in 2021 (compared to a $4.1 billion increase in 2019).[32] Additionally, Canada's Revealed Comparative Advantage (RCA) index in the Software and IT Services is the highest among all sectors, reaching 3.99 points in 2021 (slightly lower than the 10-year average of 4.38 points).[33] An RCA index higher than one shows the strength and competitiveness of the sector compared to other sectors. The ICT sector is well positioned to benefit from the post-COVID economy as digitalization continues to accelerate across industries. The demand for digital goods and the implementation of digital technology across various sectors—including those traditionally not digital—grew throughout the pandemic and is expected to continue growing. In 2019, the digital economy's share of total employment was 9.5%; by 2020, it was 11%. Despite inflationary pressures and a looming recession, the digital market is expected to continue to expand over time, attracting both public and private investment.

28 FDI flows data is not available for the ICT sector, and therefore we use FDI stock data to indicate the sector's FDI performance. Data Sources: Statistics Canada. Table 36-10-0009-01 International investment position, Canadian direct investment abroad and foreign direct investment in Canada, by North American Industry Classification System (NAICS) and region, annual (x 1,000,000). ICTC calculations.

29 Ibid.

30 Government of Canada, "Canadian ICT Sector Profile 2020 - Information and Communications Technologies."

31 fDi Markets, from the Financial Times Ltd 2022.

32 Ibid.

33 Ibid.

How COVID and Other Prominent Trends Affect Canada's Ability to Attract FDI Toward Its Digital Economy

A country's ability to attract FDI is determined by a confluence of factors. These include market size and growth potential, tax rates, incentives, labour costs and productivity, infrastructure, commodities, and regulatory restrictiveness. To understand how COVID-19 and other prominent trends affect Canada's digital economy and its ability to attract FDI, we must first understand how each trend affects pull factors for FDI attraction.

Four prominent trends and their impact on Canada's digital FDI attraction are discussed below.

TREND 1

Global Commitment to Address Environmental Issues and Enact Stricter Environmental Regulations

In the wake of increasing environmental events like floods, forest fires, melting glaciers, and heat waves, a global commitment to adequately addressing environmental issues has emerged. Over the years, international organizations and governments around the world started to implement stricter environmental regulations; key examples of this multilateral commitment incude the following: the Paris Agreement, the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA), the International Maritime Organization (IMO)'s Initial Greenhouse Gas (GHG) Strategy, and IMO 2020, an international regulation on sulphur oxide emissions. The seminal Intergovernmental Panel on Climate Change (IPCC) report in 2021 and the others that followed in 2022, confirm the need for an even more immediate and sharp reduction in GHGs; new agreements and additional policy measures are expected to tackle this collective challenge in the future.

In Canada, global environmental protection efforts have been consolidated by more restrictive domestic environmental regulations. For instance, to reduce the environmental impacts of transportation, Transport Canada began developing the CORSIA regulations in 2017, placing the carbon offsetting obligations into Canadian law in 2019. Additionally, the Canadian Net-Zero Emissions Accountability Act was introduced in 2020 to "formalize Canada's target to achieve net-zero emissions by the year 2050."[34]

A global commitment to address environmental issues and stricter international and domestic environmental regulations have broad implications on Canada's ability to attract FDI toward its digital economy, namely in areas like green tech and agri-foods, and clean technology. More specifically, these changes affect pull factors like incentives, market size and growth potential, and commodities.

Implication 1: *Increased Incentives for Green Tech and Green Energy*

Alongside stricter environmental regulations, the Government of Canada also introduced incentives to encourage green tech and green energy development and adoption, which is likely to attract both FDI and domestic investment to these emerging digitally supported sectors.

Some notable incentives introduced amid the COVID-19 pandemic include:

- In the Fall Economic Statement 2020, the federal government committed a further $287 million for the Incentives for Zero-Emission Vehicles (iZEV) Program, which offers point-of-sale incentives for consumers who buy or lease a zero-emissions vehicle.[35] Additionally, a further $150 million has been allocated to the Zero Emission Vehicle Infrastructure Program (ZEVIP) over the next three years.[36]
- The Net Zero Accelerator initiative was introduced in December 2020, providing $8 billion over seven years in support of decarbonization projects for large emitters, clean technology and industrial transformation, and development of a Canadian battery supply chain.[37]

28 FDI flows data is not available for the ICT sector, and therefore we use FDI stock data to indicate the sector's FDI performance. Data Sources: Statistics Canada. Table 36-10-0009-01 International investment position, Canadian direct investment abroad and foreign direct investment in Canada, by North American Industry Classification System (NAICS) and region, annual (x 1,000,000). ICTC calculations.

29 Ibid.

30 Government of Canada, "Canadian ICT Sector Profile 2020 - Information and Communications Technologies."

31 fDi Markets, from the Financial Times Ltd 2022.

32 Ibid.

33 Ibid.

The 2022 federal budget featured several additional incentives and funding proposals to help accelerate Canada's transition to zero emissions and attract investment in Canada's green tech sector. These include:

- Additional funding of $1.7 billion over five years to extend the iZEV program until March 2025 and to expand its scope to a wider range of vehicle models, including vans, trucks, and SUVs.[38]
- Funding of $500 million from the Canadian Infrastructure Bank for large-scale urban and commercial ZEV charging and refuelling infrastructure. This has been supplemented with additional funding of $400 million over five years to enable Natural Resources Canada to support ZEV charging and refuelling infrastructure in suburban and remote communities through the Zero Emission Vehicle Infrastructure Program.[39]
- Funding to enable wider adoption of ZEVs in Canadian commercial fleets. Proposed packages include $547.5 million over four years for Transport Canada to launch a purchase incentive program for medium and heavy duty ZEVs and $33.8 million over five years for Transport Canada to develop regulations and conduct safety tests for long-haul zero-emission trucks.
- Tax credits of up to 30% for investments in net-zero emissions technologies, battery storage solutions, and clean hydrogen.[40]
- Investment tax credits of up to 60% on carbon capture, utilization, and storage (CCUS) expenses from 2022 through 2040.[41]
- Additional funding of $329.4 million over six years to the Agricultural Clean Technology Program, which is designed to promote and subsidize the development and adoption of climate-friendly practices and technologies in agriculture.[42]
- Additional funding of $750 million over six years for Canada's Global Innovation Clusters. The additional funding aims to help expand the national presence of these superclusters and foster collaboration amongst them while working on key government priorities such as climate change mitigation and supply chain stability.[43]

38 Department of Finance Canada, "Chapter 3: Climate and Energy Security | Budget 2022," April 7, 2022, 3, https://budget.gc.ca/2022/report-rapport/chap3-en.html#m54

39 Department of Finance Canada, 3.

40 Department of Finance Canada, 3.

41 Department of Finance Canada, 3.

42 Department of Finance Canada, 3.

43 Department of Finance Canada, "Chapter 2: A Strong, Growing, and Resilient Economy | Budget 2022," April 7, 2022, 2, https://budget.gc.ca/2022/report-rapport/chap2-en.html#m40

The budget also announced the launch of the Canada Growth Fund—a new public investment vehicle that will operate at arms-length from the federal government. The fund aims to attract private sector investment toward key national economic policy goals, including transitioning to net-zero emissions, diversifying Canada's industry base, bolstering exports by investing in low-carbon industries and new technologies, and increasing the resiliency of supply chains in areas critical to Canada's future prosperity. The fund will initially be endowed with $15 billion over the next five years and will invest on a concessionary basis with the objective of attracting at least three dollars of private capital for each dollar invested.[44]

Implication 2: High Market Growth Potential for Green Tech and Green Energy

The global commitment to address environmental issues and implement stricter environmental regulations have also spurred global momentum for a more sustainable and resilient economic growth. In other words, nations and investors around the world are beginning to question the previously-held notion that all growth is good growth and are paying more attention to the environmental and social impacts of traditional notions of prosperity. In turn, this shift can also signal immense business opportunities in the green economy, an innovation area estimated to exceed $2.5 trillion by 2022.[45]

For example, in response to IMO 2020 regulations on sulphur emissions, shipping companies are considering liquefied natural gas (LNG) as an alternative fuel to heavy fuel oils. LNG offers both lower fuel prices and lower GHG emissions.[46] Although research and development on LNG propulsion systems is still in early stages, some industry leaders have already taken action. France's CMA CGM SA, the world's fourth-largest container ship operator, has recently ordered 22 LNG-powered ships, including nine megaships that will be among the world's biggest cargo vessels.[47]

44 Department of Finance Canada, "Chapter 2: A Strong, Growing, and Resilient Economy | Budget 2022," April 7, 2022, 2, https://budget.gc.ca/2022/report-rapport/chap2-en.html#m27

45 Innovation Government of Canada, "Report from Canada's Economic Strategy Tables: Clean Technology," accessed August 18, 2021, https://www.ic.gc.ca/eic/site/098.nsf/eng/00023.html

46 Costas Paris, "Natural Gas Won't Decarbonize Shipping, But the Fuel Is Here to Stay," The Wall Street Tournal, accessed August 26, 2021, https://www.wsj.com/articles/natural-gas-wont-decarbonize-shipping-but-the-fuel-is-here-to-stay-11580814000

47 Paris.

As fuel typically accounts for up to 50% of a ship's operating costs, shipping companies have also invested billions of dollars in retrofitting vessels with sulphur trapping exhaust systems and scrubbers, each costing between US$2 million and US$4 million. These systems offer a way to sidestep an increase in spending on cleaner fuels: scrubbers make financial sense when the price spread between heavy oils and cleaner fuels is more than US$100 per tonne.[48] For example, in late 2019, when the gap between diesel and cleaner fuel reached US$300 per tonne, scrubber orders poured into manufacturers like Wartsila, Sweden's Alfa Laval AB, and Norway's Yara Marine Technologies.[49]

In Canada, the ZEV market is another growing area of the digital economy, and consumers are responding to incentives in this space. As of July 2021, the iZEV program has helped more than 100,000 people and businesses purchase or lease a ZEV.[50] As a result, ZEVs' market share continued to grow amid the pandemic, rising to 3.5% in 2020 from 2.9% in 2019.[51] Furthermore, a survey conducted by KPMG indicates that nearly 70% of Canadians who have plans to buy a new vehicle within the next five years will likely purchase an electric one.[52] A growing domestic market for green tech and green energy is likely to further attract FDI to Canada's green economy.

In addition to the federal government's fiscal measures aimed at combating climate change, regional governments have also implemented climate action plans that will create immense investment opportunities for the green economy. For example, the Halifax Regional Municipality developed HalifACT in 2020, a climate action plan coupled with a $22 billion investment over the next 30 years for retrofits, electrify transportation, and the transition to clean and renewable energy across industries.

Implication 3: *Increased Demand for Commodities*

Climate action plans and incentives introduced by governments around the world have also spurred large and capital-intensive public and private infrastructure projects, fuelling a new supercycle of metals and energy. Access to vast natural resources positions Canada as a competitive FDI destination for investors in natural resources related to clean tech and clean energy.

48 Costas Paris, "Big Bets on Ship Exhaust Systems Cast a Cloud Over Vessel Owners - WSJ," The Wall Street Tournal, accessed August 26, 2021, https://www.wsj.com/articles/big-bets-on-ship-exhaust-systems-cast-a-cloud-over-vessel-owners-11604052003

49 Paris.

50 "More than 100,000 Canadians Have Benefited from the Incentives for Zero-Emission Vehicles Program," Canada Newswire, accessed August 20, 2021, https://www.newswire.ca/news-releases/more-than-100-000-canadians-have-benefited-from-the-incentives-for-zero-emission-vehicles-program-873925531.html

51 Emma Jarratt, "Zero-Emission Vehicle Market Share in Canada Rose to 3.5 per Cent in 2020," accessed August 20, 2021, https://electricautonomy.ca/2021/04/23/canadian-ev-sales-data-2020/

52 Nate Hendley, "Canada Jumps into Electric Vehicle Industry," accessed August 20, 2021, https://www.canadianmetalworking.com/canadianmetalworking/article/madeincanada/canada-jumps-into-electric-vehicle-industry

For example, Canada has one of the largest natural gas reserves of any country in the world. In addition to a growing demand for natural gas driven by ship operators that are switching from bunker fuels to LNG, significant global demand for natural gas is expected, especially in countries where imported natural gas could displace more carbon-intensive energy sources such as coal. Additionally, Canada is one of the only countries in the western hemisphere that has all the critical minerals required to manufacture electric vehicle (EV) batteries, a key component of the global EV market and supply chain. In fact, Canada was ranked fourth in the world for lithium-ion battery raw material availability in 2020, behind China, Australia, and Brazil.[53]

Budget 2022 underlines the government's recognition of the critical importance of these metals and minerals in the transition to clean and renewable energy. It proposes an additional $1 billion in funding, starting in 2024-25, to the Strategic Innovation Fund managed by Innovation, Science and Economic Development Canada.[54] The funding aims to help attract investment in criticals mineral projects and supply chains and is complemented by additional funding to support critical mineral exploration and development through data sharing agreements, the simplification of regulatory processes around critical minerals projects, and a new 30% tax credit for specific mineral exploration expenses incurred in Canada.[55]

Key Takeaways

A global commitment to addressing environmental issues and the willingness among policymakers to implement stricter environmental regulations have an overall positive impact on Canada's ability to attract FDI to the digital economy. Namely, it is expected that Canada's attraction capacity and attractiveness will scale in the green economy and clean tech subsectors. The following includes some key factors that make Canada an attractive destination for green tech FDI in the coming years:

- Supportive government policies that provide market certainties in the green tech and green energy sectors

53 Veronika Henze, "China Dominates the Lithium-Ion Battery Supply Chain, but Europe Is on the Rise | BloombergNEF," accessed August 20, 2021, https://about.bnef.com/blog/china-dominates-the-lithium-ion-battery-supply-chain-but-europe-is-on-the-rise/

54 Department of Finance Canada, "Chapter 2," April 7, 2022, 2.

55 Department of Finance Canada, 30.

- Increased "green incentives" that encourage consumers and businesses to further adopt and develop green tech and green energy, creating strong market growth potential
- An increasing demand for metals and energy used in the development of green tech and green energy

TREND 2

Immigration Backlog and Labour Market Tightness

Accounting for 86% of Canada's population growth in 2019, immigrants play a vital role in the country's economy and labour market. Immigrants have become an especially important source of labour for Canada's ICT sector. In 2019, about 40% of workers in ICT roles were born outside Canada, a growth of 10% since 2009.[56] Immigration is also positively associated with labour productivity. A recent study published by Statistics Canada finds a positive association between growth in the share of immigrants in a company and the company's productivity. Moreover, the positive effect of immigration on business productivity is more pronounced in technology-intensive and knowledge-based industries, such as the digital economy.[57]

> *Canadians understand that newcomers are playing an outsized role in stepping up to fill some of our most acute labour shortages and that growing our population is imperative if we want to leverage the advantages we have and keep Canada competitive on the world stage.*
>
> – Marco Mendicino, Minister of Immigration, Refugees and Citizenship of Canada

On March 18, 2020, at the onset of the COVID-19 pandemic, the Government of Canada announced travel entry restrictions for most foreigners, including permanent immigrants. Similar travel restrictions on admissions of foreigners were seen in almost all OECD countries, as most jurisdictions implemented new immigration restrictions. Examples include temporally prohibiting entry of non-citizens and non-residents, advising against nonessential travel, or introducing other stringent policies, like limiting immigration from certain countries or under certain visas.

56 Alexandra Cutean et al., "Canada's Growth Currency: Digital Talent Outlook 2023. Information and Communications Technology Council (ICTC), https://www.ictc-ctic.ca/wp-content/uploads/2019/11/canada-growth-currency-2019-FINAL-ENG.pdf

57 Wulong Gu, Feng Hou, and Garnett Picot, "Immigration and Firm Productivity: Evidence from the Canadian Employer-Employee Dynamics Database," accessed August 24, 2021, https://www150.statcan.gc.ca/n1/pub/11f0019m/11f0019m2020014-eng.htm

As a result of border controls and health risks brought on by COVID-19, Canada has seen only a fraction of the permanent resident admissions of previous years—immigration was set to reach 341,000 people in 2020, but only 184,595 admissions were permitted.[58] The downgrading of admission levels during 2020 plays an important role on FDI attractiveness because the presence of skilled immigrants is associated with higher rates of productivity.

Aware of this connection, the Canadian government plans to compensate for low admission levels in 2020 in the coming years. Canada plans to admit over 1.2 million new immigrants[59] under the 2021-2023 Immigration Levels Plan announced on November 1, 2020.[60] This figure includes the Federal Skilled Worker program, which aims to accept 110,500 immigrants in 2022, and 113,750 immigrants in 2023.[61] There has been a resumption of immigration after the COVID-induced drop in 2020, with over 405,000 new immigrants accepted to Canada in 2021.[62] However, COVID-related delays coupled with geopolitical tensions in Afghanistan and Ukraine have also resulted in a dramatic surge in the backlog of immigration applications to Canada across all applicant categories. The inventory of applications ballooned from 1.4 million in July 2021 to 2.4 million in June 2022.[63] Moreover, this labour supply constraint has been compounded by high job vacancy rates and low unemployment rates in several sectors, creating a tight labour market.[64]

Implication 1: Lower Labour Productivity and Higher Wage Rates in the Short Run

The immigration shortfall from 2020 and current application backlog is likely to affect Canada's wage rates and labour productivity in the near term, especially when coupled with the current labour market tightness. Both wage and labour productivity are key pull factors for FDI attraction, and this impact on labour supply is likely to exert downward pressure on labour productivity and upward pressure on wages.

58 Amanda Coletta, "Canada Gets 'Creative' on Immigration: Looking to Keep People Already There - The Washington Post," accessed August 24, 2021, https://www.washingtonpost.com/world/2021/08/07/canada-immigration-pandemic/

59 Kathleen Harris, "Federal government plans to bring in more than 1.2M immigrants in next 3 years," CBC, October 30, 2020, https://www.cbc.ca/news/politics/mendicino-immigration-pandemic-refugees-1.5782642

60 Kareem El-Assal and Shelby Thevenot, "What will Canadian immigration look like post-coronavirus?," August 2020, CIC News, https://www.cicnews.com/2020/08/what-will-canadian-immigration-look-like-post-coronavirus-0815567.html#gs.l5s6tn

61 Mohanad Moetaz, "Canada to welcome over 1.2 million immigrants in the next three years," CanadaVisa, https://www.canadavisa.com/news/canada-to-welcome-over-one-million-immigrants-in-the-next-three-years.html#gs.l5q580

62 "Estimates of the Components of International Migration, Quarterly," Statistics Canada, accessed October 6, 2021, https://www150.statcan.gc.ca/t1/tbl1/en/cv.action?pid=1710004001

63 Deena Zaidi, "'Our Lives Have Come to a Screeching Halt': Canada's Immigration Backlog Reaches 2.4M," CTVNews, June 17, 2022, https://www.ctvnews.ca/canada/our-lives-have-come-to-a-screeching-halt-canada-s-immigration-backlog-reaches-2-4m-1.5950219

64 Randy Thanthong-Knight and Erik Hertzberg, "Job Vacancies Hit Record in Canada's Tight Labour Market," BNN Bloomberg, May 26, 2022, https://www.bnnbloomberg.ca/job-vacancies-hit-record-in-canada-s-tight-labour-market-1.1771058

Prior to the pandemic, Canada's average wage was only second to the U.S. among G7 countries. During the pandemic, Canada and the U.S. were the only two countries in the G7 to register an increase in average wages; all other G7 countries saw a decrease in wages.[65]

In terms of labour productivity (measured in business output per hour worked), Canada ranked the second lowest among G7 countries between 1990 and 2019. Canada registered a record increase of 7.4% in labour productivity during the pandemic,[66] but this was a result of a drastic decline of hours worked (due to unprecedented unemployment) relative to a decrease in business output.[67] In other words, the pandemic has put even more pressure on Canada to boost its productivity rate, compared to its G7 peers.

As immigration is a main source of labour supply and is positively associated with labour productivity, the plunge in immigration for 2020 and the current backlog will constrain labour supply in the short term, inflate wages, and add downward pressure on labour productivity. Moreover, Canada is expected to see a continued surge in labour demand in the digital economy, adding 250,000 jobs by 2025.[68] Filling this demand will require all skilled supply streams, including skilled immigrants.

Talent is getting harder to come by [in Canada]. We know some reasons why, for example, one being that immigration became almost impossible during the height of pandemic. We need access to talent via immigration so that our talent pool doesn't shrink. – VP, ICT company, USA

Key Takeaways

For investors, labour productivity and labour costs are important factors when selecting FDI destinations. The 2020 drop in Canadian immigration and the current short-term backlog of applications is likely to put upward pressure on wages and downward pressure on labour productivity, two factors that will negatively (though temporarily) affect Canada's ability to attract FDI across all industries, including the digital sector. To mitigate this impact, it is crucial that Canada focus on attracting high-skilled immigrants to help fill excess labour demand in the Canadian digital economy.

65 OECD (2021), Average wages (indicator). doi: 10.1787/cc3e1387-en (Accessed on 27 August 2021)

66 OECD (2021), Labour productivity and utilisation (indicator). doi: 10.1787/02c02f63-en (Accessed on 27 August 2021)

67 Sarah Dobson, "Canada Sees Record Labour Productivity in 2020," Canadian HR Reporter, accessed August 27, 2021, https://www.hrreporter.com/focus-areas/people-analytics/canada-sees-record-labour-productivity-in-2020/356484

68 Akshay Kotak and Maryna Ivus, "ICTC Labour Market Outlook."

TREND 3

OECD-Led International Tax Reform

Relative tax burden is an important factor for investors when deciding on investment locations. Studies examining cross-border flows suggest that at an aggregate level, FDI decreases by 3.7% for each percentage point increase in the tax rate on FDI.[69] Moreover, recent studies found that FDI is becoming increasingly sensitive to taxation, when non-tax barriers to FDI are removed.[70]

Governments around the world are keen to attract FDI so as to increase GDP, jobs, and public income. Therefore, policymakers continually re-examine tax policies to ensure they are globally competitive. At the same time, governments need to ensure an appropriate share of tax revenue generated by multinational corporations and a fair tax system for domestic companies. How FDI will respond to a tax cut is unlikely to be uniform across countries or industries, but it is expected to play a key role in addition to other FDI attraction factors, such as market growth potential, talent availability, and infrastructure readiness.

OECD-Led Global Tax Reform Amid the Pandemic

On July 1, 2021, Canada and 129 countries and jurisdictions (including tax havens such as Netherlands, Singapore, Luxembourg, and Bermuda) joined a global tax reform led by the OECD. The tax reform takes a two-pillar approach to address tax challenges arising from the increasingly digitized global economy.[71]

Pillar One aims to ensure that large multinational enterprises (MNEs) pay tax where they operate and earn profits, regardless of whether they have a physical presence there. It is estimated that more than US$100 billion of profit is taxed by market countries and jurisdictions each year.[72]

Pillar Two introduces a global minimum corporate tax rate of 15%, which will help countries and jurisdictions protect tax bases by introducing a floor to corporate income tax competition. Under Pillar Two, it is estimated that around a US$150 billion global tax revenue will be generated annually.[73]

69 OECD, Tax Effects on Foreign Direct Investment: Recent Evidence and Policy Analysis, Tax Effects on Foreign Direct Investment (OECD, 2007), https://doi.org/10.1787/9789264038387-en

70 Ibid.

71 "130 Countries and Jurisdictions Join Bold New Framework for International Tax Reform - OECD," accessed August 6, 2021, https://www.oecd.org/newsroom/130-countries-and-jurisdictions-join-bold-new-framework-for-international-tax-reform.htm

72 Ibid.

73 Ibid.

Participating countries and jurisdictions are expected to design a plan for effective implementation in 2023. In the latest federal budget, the Government of Canada reaffirmed its intention to implement both pillars of this plan in the coming years.[74] Specifically, Budget 2022 outlines the government's continued efforts to work with international partners in setting up the multilateral tax framework needed to implement Pillar One.[75] The 2022 federal budget also outlines the government's plans to implement Pillar Two in accordance with the model rules and framework outlined by the OECD, and in keeping with similar legislative developments in other peer countries.[76]

Implication 1: Reduced Competition for Canada

Canada's corporate income tax rate is competitive among G7 countries; it has ranked as the third lowest since 2018 (averaging 26.4% from 2018 to 2021), after the UK (19.0%) and the U.S. (25.8%).[77] If comparing the marginal effective tax rate (METR)—an estimate of the level of taxation on a new business investment—Canada's average METR of 13.7% is the lowest in the G7 and below the OECD's average of 18.4%.[78] Compared to the U.S., Canada has a relative tax advantage of 4.7% in overall METR, with the manufacturing sector's average METR 16.4% below that of its U.S. counterpart.[79] This relative tax advantage for new business investment puts Canada in a strong position to attract greenfield FDI toward its digital economy, especially in the advanced manufacturing sector.

The OECD-led global tax reform, when implemented, will put a floor on the competition in corporate income tax (under Pillar Two of the package) and effectively reduce the advantage that tax havens provide. As a result, other FDI attraction factors than tax rates become important to investors when selecting investment locations. This provides FDI opportunities for Canada's digital economy to attract tech giants like Google and Amazon while appealing to tech startups that would otherwise set up shop or continue expanding in tax havens.

74 Department of Finance Canada, "Chapter 9: Tax Fairness and Effective Government | Budget 2022," April 7, 2022, 9, https://budget.gc.ca/2022/report-rapport/chap9-en.html#m164

75 Department of Finance Canada, "Tax Measures: Supplementary Information | Budget 2022," April 7, 2022, https://budget.gc.ca/2022/report-rapport/tm-mf-en.html#a4

76 Ibid.

77 OECD. Stat, Tax Database: Table II.1 dataset, accessed August 25, 2021.

78 "Marginal Effective Tax Rates," Department of Finance, accessed August 25, 2021, https://www.canada.ca/en/department-finance/news/2019/07/backgrounder--marginal-effective-tax-rates.html

79 Ibid.

Key Takeaways

By putting a floor on competition for corporate income tax, the OECD-led global tax reform effectively reduces the advantage of tax havens in FDI attraction and potentially increases Canada's ability to attract FDI to its digital economy. The extent to which Canada can benefit from this change in the global tax system depends also on its ability to bolster other FDI attraction factors, but the tax reform will play a key role in digital FDI attraction.

TREND 4

Accelerated Digital Adoption and Transformation

The COVID-19 pandemic has accelerated digitalization across industries. Developments like working from home arrangements, online shopping, and automated manufacturing during the pandemic are likely to continue after the pandemic and drive further digitalization. At the same time, accelerated digitalization also requires more robust and accessible digital infrastructure, which is fundamental to growing the digital economy. The demand for digital infrastructure will likely also be boosted by federal support programs such as the Canada Digital Adoption Program, launched in March 2022. This program aims to facilitate digital adoption among Canadian SMEs through $1.4 billion in grants and advisory services from the Government of Canada and up to $2.6 billion in loans from the Business Development Bank of Canada.[80]

How did the pandemic hit us? In the first three months, we were stuck. Our customers are hospitals, and they were focused on rearranging their services and preparing for the second wave. We lost all communication with them, except in the area of virtual care. They all wanted to go virtual quickly.

– VP, global health tech company

Implication 1: *Canada's Digital Economy Continues to Grow*

Canada's digital economy accounted for $118 billion, or 5.5% of Canada's total GDP in 2019, making it larger than the educational services sector ($117 billion) and comparable to the mining, quarrying, and oil and gas extraction sector ($119 billion).[81]

80 Innovation, Science and Economic Development Canada, "Backgrounder – The Canada Digital Adoption Program," March 3, 2022, https://www.canada.ca/en/innovation-science-economic-development/news/2022/03/backgrounder--the-canada-digital-adoption-program.html

81 Statistics Canada, "The Daily — Digital Supply and Use Tables, 2017 to 2019," April 20, 2021, https://www150.statcan.gc.ca/n1/daily-quotidien/210420/dq210420a-eng.htm

As digital adoption and transformation continue to accelerate in the post-pandemic era, demand for ICT equipment, e-commerce transactions, and digital deliveries of products and services is expected. Canada's market growth potential is set to increase the country's ability to attract FDI toward its digital economy.

> *With everything that's happened and the transformative phase we have entered and we're going to stay in, I think the next decade is going to be a decade of digital transformation.* – VP, global health tech company

Implication 2: *Higher Digital Infrastructure Requirements*

Yet, unlocking digital market growth across the board will require more reliable and accessible digital infrastructure—5G networks offer speeds 200 times faster and one-tenth the latency of current 4G networks.[82] Many countries around the world have built 5G infrastructure, however, Canada is lagging in both 5G adoption and speeds.

Canada's 5G adoption rate ranked fifth among 65 countries surveyed by VIAVI Solutions. As of June 2021, there are 81 Canadian cities offering 5G, compared to 284 cities in the U.S. (second place) and 95 cities in Philippines (third place).[83] Ottawa ranked twentieth among 109 world capitals in terms of 5G speeds, according to a 2021 survey conducted by Ookla, a speed testing company.[84] Among G7 countries, Paris was the best performing capital, with a median download speed at 208.48 Mbps, and Ottawa was at 196.11 Mbps.[85]

There are four main reasons that could explain Canada's lagging 5G adoption and internet speeds, which are a core component of enabling large-scale digitization across industries:

1 Limited access to spectrum. Canada's availability of mid-band spectrum (the 1 GHz - 6 GHz range)—which is instrumental to meet the coverage, capacity, and speed requirements of 5G technology—lags behind several countries, including Australia, Japan, the UK and the U.S.

82 "Digital Infrastructure," Organisation for Economic Co-operation and Development (OECD), accessed August 30, 2021, https://www.oecd.org/going-digital/topics/digital-infrastructure/

83 Scottsdale Ariz, "5G Service Now Reaches 1,662 Cities Worldwide, New VIAVI Report Reveals," VIAVI Solutions Inc., accessed August 30, 2021, https://www.viavisolutions.com/en-us/news-releases/5g-service-now-reaches-1662-cities-worldwide-new-viavi-report-reveals

84 Josh Fomon, "Oslo Tops the List of World Capitals with the Fastest 5G in Q1-Q2 2021," accessed August 30, 2021, https://www.speedtest.net/insights/blog/5g-world-capitals-q1-q2-2021/

85 Fomon.

86 "5G Technology: Opportunities, Challenges and Risks - HillNotes," Library of Parliament, accessed August 25, 2021, https://hillnotes.ca/2020/02/13/5g-technology-opportunities-challenges-and-risks/

87 Hardik Khatri, "In the 5G Era, Canada Is Losing Global Leadership Due to Spectrum Challenges," OPENSIGNAL, accessed August 25, 2021, https://www.opensignal.com/2021/03/24/in-the-5g-era-canada-is-losing-global-leadership-due-to-spectrum-challenges

Due to COVID-19, the assignment of the 3.5 GHz bands was delayed, but even after the auction, Canadian operators have a very limited amount of spectrum in the 3.5 GHz band. Moreover, 200 MHz is shared by 15 companies, which is significantly lower than the International Telecommunication Union's technical requirement of at least 100 MHz per operator.[87]

2 Outdated antenna regulations. As the Internet of Things (IoT) evolves with the introduction of 5G, the number of connected objects could increase by several billion in the next decade, creating a significant increase in connectivity needs. Small cell antennas could meet increased connectivity needs, and these shoebox-sized antennas could be installed on various infrastructure, including streetlights and public buildings.[88] In 2018, there were approximately 13,000 wireless antenna locations in Canada, but this will need to dramatically increase with accelerated connectivity needs as all sectors of the economy digitize.[89] However, several Canadian telecommunication operators have raised concerns about the availability of antenna locations. Many state that current antenna regulations are outdated and make it challenging to access to antenna locations.[90]

3 FDI restrictiveness—above the OECD average. According to the OECD's FDI restrictiveness index,[91] Canada has the highest FDI regulatory restrictiveness among G7 countries,[92] which positions Canada as a less open economy to foreign investors. In the telecommunications sector, Canada's has the highest FDI restrictiveness coefficient among OECD countries—about seven times higher than the OECD average.[93] A high level of restrictiveness in FDI is a key barrier to attracting much needed international capital to develop and accelerate Canada's 5G network and 5G-enabled technologies and applications (e.g. the IoT, smart cities, and autonomous vehicles).

4 Consumer adoption takes time. A wider adoption of 5G also relies on the demand side of the technology, i.e., the number of consumers and their adoption of 5G-compatible devices. For example, the share of 5G-enabled mobile connections in Canada accounted for roughly 8% of all mobile connections in 2021, but it is expected to grow to 49% by 2025.[94]

87 Hardik Khatri, "In the 5G Era, Canada Is Losing Global Leadership Due to Spectrum Challenges," OPENSIGNAL, accessed August 25, 2021, https://www.opensignal.com/2021/03/24/in-the-5g-era-canada-is-losing-global-leadership-due-to-spectrum-challenges

88 "5G Technology: Opportunities, Challenges and Risks - HillNotes."

89 Ibid.

90 Ibid.

91 OECD's FDI Index gauges the restrictiveness of a country's FDI rules by looking at the four main types of restrictions on FDI: foreign equity limitations, screening or approval mechanisms, restrictions on the employment of foreigners as key personnel, and operational restrictions, e.g. restrictions on branching and on capital repatriation or on land ownership.

92 Ibid.

93 ICTC calculations. Data source: OECD (2021), FDI restrictiveness (indicator). doi: 10.1787/c176b7fa-en (Accessed on 30 August 2021)

94 "Forecast 5G Adoption Rate Canada 2021-2025," Statista, accessed August 30, 2021, https://www.statista.com/statistics/792437/5g-adoption-rate-forecast-in-canada/

Key Takeaways

The pandemic accelerated digitalization across all industries and has created significant market growth potential, which increases Canada's ability to attract FDI to its digital economy. Yet, accessing the robust infrastructure needed to support digitization and cross-industry digital service delivery is instrumental to unlocking the true potential of this market growth. On its own, this is an important pull factor for FDI attraction in the digital space. Left unaddressed, lagging 5G adoption and internet speeds will slow digital adoption and transformation across industries and hinder Canada's otherwise significant ability to attract FDI to its digital economy.

SECTION III

Opportunities for FDI Attraction in the Canadian Digital Economy

Over the past two decades, the Canadian economy has experienced accelerating digital adoption and transformation.[95] This digitization has been proven to contribute to higher labour productivity, namely among sectors where digital inputs have been used more intensively in business operations and economic activities (e.g., primary metal; machinery; computer and electronic products; transportation equipment manufacturing; pipeline transportation; publishing and data processing; broadcasting and telecommunications; professional, scientific and technical services; and finance and insurance[96]). According to recent research from Statistics Canada, digitally intensive sectors registered a 22.1% increase in labour productivity growth between 2002 and 2019, more than three times higher than those that do not leverage digital technology extensively.[97]

The COVID-19 pandemic underscores the benefit of digitalization across the economy. Digitally intensive sectors have not only weathered the pandemic-induced adverse impacts better, but also recovered faster than non-digitally intensive sectors. Although all sectors registered declines in GDP and employment in 2020, employment in digitally intensive sectors surpassed 2019 levels by September 2020, while aggregate GDP in these sectors was only 0.9% below 2019 levels.[98] Comparatively, by September 2020, employment and GDP in the non-digitally intensive sectors was 5.3% and 7.8% below 2019 levels.[99] By 2021, annual average employment and GDP in digitally intensive sectors were already higher than their pre-pandemic peaks from 2019, by 0.6% and 2.0% respectively. On the other hand, employment and GDP in non-digitally intensive sectors in 2021 were still below their levels from 2019, by 4% and 1.2% respectively.[100]

As social and economic changes continue to unfold and analysts are struggling to capture and measure the evolving impacts, one thing is certain: wider digital adoption and transformation will continue across industries.

95 Huju Liu, "Economic Performance Associated with Digitalization in Canada over the Past Two Decades."

96 Huju Liu.

97 Huju Liu.

98 Huju Liu.

99 Huju Liu.

100 ICTC calculations based on Huju Liu and Julien McDonald-Guimond, "Measuring Digital Intensity in the Canadian Economy," Economic and Social Reports 1, no. 2 (February 24, 2021), https://doi.org/10.25318/36280001202100200003-eng. Data sources: Statistics Canada. Table: 14-10-0202-01 Employment by industry, annual; and Table: 36-10-0434-06 Gross domestic product (GDP) at basic prices, by industry, annual average, industry detail (x 1,000,000).

Decade of Digital Transformation: Focusing on Traditional Sectors

Interviewees mentioned that businesses and organizations recognized the importance of the "decade of digital transformation" and the need to integrate and optimize digital technology. As digitalization continues to accelerate, it brings notable investment opportunities across several industries. In addition to FDI opportunities in Canada's green tech and green energy sector discussed in the previous section, health tech, agri-foods and agtech are other industries that are poised to grow and potentially attract investment. Notably, these sectors were identified by global investors interviewed in this study as industries with high-growth potential both for Canada and internationally.

> *Let's assume COVID-19 finishes...digital transformation will still be a major requirement going forward. Not everything has converted as part of the digital economy... There are still opportunities for many sectors to get up to speed.* – CEO, ICT company, USA

The Digital Health Revolution: Opportunities in Canada's Emerging Health Tech Industry

Canada's healthcare sector has demonstrated strong adaptability in utilizing virtual care and telehealth during the pandemic, both enabled by digital technologies and networks. The adoption of virtual care and remote services are likely to persist post-pandemic as patients have acclimated to this new style of care and pressures on the healthcare system persevere. With this comes notable FDI opportunities when coupled with the expansion of digital health services and health technology. Additionally, in response to the pandemic-induced health crisis and resulting higher demand for healthcare, governments must seek alternatives that can create efficiencies while maintaining a high level of care. This indicates not only direct opportunities in health tech itself, but the increasing blend of health and other sectors like digital media.

> *Biotech and pharmaceuticals are all going to boom. There's no question about that. Government investment in healthcare is going to reach record highs... All those things will have a digital component to them.*
>
> – President, global digital media company

FDI Pull Factor: *Increased Demand for Health Tech*

Amid the pandemic, companies took efforts to avoid human capital loss and ensure employee safety and health. As a result, health tech companies have seen an increasing demand for digitally enabled healthcare services. For example, Vancouver-based health tech firm MolecularYou launched new corporate health programs, including an AI-powered health-intelligence solution as part of its employee benefit program.[101] The increasing demand for digitally enabled healthcare services is likely to attract business investment and market-seeking FDI to Canada's health tech sector. Reconsidering current costly and lengthy procurement processes in the healthcare sector could create more efficient environments for both domestic and foreign businesses and investors.

> *People are starting to become more conscious of their health. So now that we're getting these corporate health programs kicked off ... people are thinking what puts me at risk of a severe COVID response or to any virus, and what can I do to help me better prepare for that... It turns out not many people cared about their health to this extent before COVID, but now they do.* – CEO, global health tech company

FDI Pull Factor: *Increased Demand for Digital Infrastructure*

COVID-19 also underscores the importance of investing in digital infrastructure that enables service providers to digitally interact with patients without barriers. As virtual care and remote healthcare services are expected to be an important method to reduce medical backlogs due to COVID, the healthcare sector is investing significantly in digital infrastructure. Such investments open up broader adoption of virtual care and other digital health services (including providing more Canadians with access to healthcare). This will broaden and expand the health tech market, further attracting businesses and FDI that can support the digital infrastructure buildout.

> *We're investing more, and we think this is the year to put big investments into the space... We're investing in the digital capabilities of our team, in our digital infrastructure, and how we can digitally interact with our customers in the most convenient way for them. We're using digital technologies and investing in how we do our research and development, how we pick our patients, how we develop treatments differently, and how we develop real world evidence.* – VP, health tech company, USA

101 "Corporate Wellness," molecularyou, accessed September 21, 2021, https://molecularyou.com/corporate-wellness/

FDI Pull Factor: A More Efficient Business Environment

Amid the pandemic, provinces radically reduced timelines within the procurement process, which can normally take three years or more, to enable hospitals to quickly acquire the technology for virtual care. The pandemic pushed governments to reconsider costly and lengthy procurement processes as they scrambled to manage the crisis. In turn, this created a more amenable environment for future investments in other technologies.

Agri-Food Sector: Opportunities Driven by Growing World Population and Changes in Diets

Benefiting from an abundant supply of natural resources, free trade agreements, and efficient access to global supply chains, Canada is the fifth largest agricultural commodities exporter in the world.[102] Export commodities include durum wheat, barley, corn, oats, and soybeans. Canada's agri-food sector (including agriculture, fisheries and aquaculture, and food and beverage processing[103]) has experienced significant growth in the last decade. From 2012 to 2016, agri-food grew by 11% in GDP, outperforming the overall economy, which grew by 7.8% during the same period.[104]

As the world population and the middle-class continue to grow, the demand for food and high-quality proteins around the world also grows.[105] In fact, it is estimated that agri-food demand in 2050 will be 50% higher than it was in 2013,[106] bringing immense business opportunities for Canada's agri-food sector. Moreover, a global commitment to address environmental issues and an increased consumer awareness of climate change are boosting demand for alternative proteins (e.g., plant-base meat, lab-grown meat, and dairy products), bringing more business and investment opportunities for Canada's agri-food sector.

While Canadian agri-food is well positioned to benefit from the increasing global demand for food and alternative proteins, the sector also has significant room to further grow and improve its competitiveness through digitalization and technology adoption.

102 "Agribusiness," Invest in Canada, accessed October 15, 2021, https://www.investcanada.ca/industries/agribusiness

103 "Agri-Food Table," Government of Canada, accessed October 30, 2021, https://www.ic.gc.ca/eic/site/098.nsf/eng/00015.html

104 "Overview of the Canadian agriculture and agri-food sector 2018," November 20th, 2020, Government of Canada, https://agr.gc.ca/eng/canadas-agriculture-sectors/sector-overviews-data-and-reports/overview-of-the-canadian-agriculture-and-agri-food-sector-2018/?id=1605883547264

105 "Agri-Food Interim Report," 2017, ISED, https://www.ic.gc.ca/eic/site/098.nsf/vwapj/ISEDC_Table_AF.pdf/$file/ISEDC_Table_AF.pdf

106 Ibid.

According to Census of Agriculture, only 66.3% of farms used technology in their operations in 2016, with 56.2% of those using computers and laptops, and 42.9% using smartphones or tablets for farm management.[107] The percentages became even smaller for technologies like Global Positioning System (GPS) at 30.1%, and Geographic Information System (GIS) at 8.2%.[108] According to Canada's Economic Strategy Tables, a industry-government collaboration, "Canada's agri-food sector has low rates of technology adoption compared to other countries," and "players who do not embrace automation, digitization, and other technological advances will simply become non-competitive."[109]

FDI Pull Factor: *Increased Market Demand for Alternative Proteins*

A high level of consumer awareness of climate change provides greater market certainty for business expansion and investment in alternative proteins. In Canada, consumers are increasingly turning to plant-based products, which are the largest source of alternative proteins. According to a 2021 survey by Deloitte, 44% of surveyed Canadians have tried to consume less meat in 2020, and 79% of surveyed Canadians increased their spending on plant-based milks and other non-dairy products in 2021.[110] Further, 72% have increased their purchases of alternative meat products.[111]

FDI Pull Factor: *Increased Market Demand for Agtech Products and Services*

Investing in agricultural technology (agtech) is the key to unlock the growth potential of Canada's agri-food sector, and the current low rates of digitalization and technology adoption in the sector indicates a rising future demand for agtech services and products.

Agtech is a suite of technologies, systems, and applications used in the agri-food sector to increase production efficiency, lower costs, and reduce impacts on ecosystems. Agtech has broad applications in all stages of agri-food production and marketing, enabling businesses to be more profitable and environmentally friendly. For example, equipped with data analytics applications, businesses can gain insights on plant and soil health and quality throughout the production process and take preventive action. IoT devices and networks—including drones, satellites, sensors, GPS and GIS systems—allow businesses to benefit from precision farming (a management system that optimizes returns on resources such as water, fertilizer, and pesticides) to reduce negative impacts on the ecosystem.

107 "Growing Opportunity through Innovation in Agriculture," Statistics Canada, accessed October 27, 2021, https://www150.statcan.gc.ca/n1/pub/95-640-x/2016001/article/14816-eng.htm

108 "Growing Opportunity through Innovation in Agriculture."

109 Government of Canada, "Report from Canada's Economic Strategy Tables."

110 "The future of food: a Canadian perspective; The conflicted consumer 2021 food consumer survey," 2021, Deloitte, https://www2.deloitte.com/content/dam/Deloitte/ca/Documents/consumer-business/ca_futureoffood_pov_en_AODA.pdf

111 Ibid.

Additionally, businesses equipped with blockchain-enabled grocery supply chain management systems can increase food quality and provide food tracing and tracking information to socially and environmentally cautious consumers.

> *In Canada and everywhere, people are interested in traceability of their foods and what's going on with pesticides... There's a whole lot of things going on that's helping drive our demand (precision crop management platform) right now.* – Director, global agtech company

> *Eventually our products will not only tell you what's happening but actually help you control what happens remotely... We've got a partnership right now with a company that does wind machines. When there's frost on a particular crop and you're worried about it... we can tell you if your wind machine is on or off. So, right now, you know that it's working properly, but the next evolution will actually help you control it remotely so that nobody has to get in a truck.* – Director, global agtech company

FDI Pull Factor: *Government Support*

In addition to business and investment opportunities brought about by agtech adoptions and a growing market demand for food and alternative proteins, government subsidies and investments are also adding momentum for a more digitalized, sustainable, and competitive agri-food sector, positioning Canada as an attractive FDI destination for global investors. For instance, through the Canadian Agricultural Partnership, the governments of Canada and Ontario invested $2.5 million in 2020 to help agri-food businesses establish an e-commerce platform and marketing presence.[112] This funding falls under a five-year, $3-billion initiative supporting and strengthening Canada's agri-food sector through innovation and science. To reduce the sector's carbon footprint, Agriculture and Agri-Food Canada announced in 2021 an investment of $185 million over 10 years for a new Agricultural Climate Solutions (ACS) program that will "help develop and implement farming practices to tackle climate change."[113] Furthermore, an investment of $165.7 million is allocated to help the agri-food sector develop and adopt transformative clean technologies through the Agricultural Clean Technology Program (ACTP).[114]

112 "Governments Invest $2.5 Million to Grow Agri-Food e-Business During COVID-19," Agriculture and Agri-Food Canada, accessed October 29, 2021, https://www.canada.ca/en/agriculture-agri-food/news/2020/04/governments-invest-25-million-to-grow-agri-food-e-business-during-covid-19.html

113 "Agricultural Climate Solutions," Agriculture and Agri-Food Canada, accessed October 30, 2021, https://www.canada.ca/en/agriculture-agri-food/news/2021/03/backgrounder-agricultural-climate-solutions.html

114 "A Healthy Environment and a Healthy Economy," March 8, 2021, Government of Canada, https://www.canada.ca/en/environment-climate-change/news/2020/12/a-healthy-environment-and-a-healthy-economy.html

Snapshot: *Canadian Government Boosting AI Investment Attraction*

Canada is considered as a top destination for AI investment among business leaders due to its skilled talent base, strong AI education offerings, and a favourable immigration policy to attract AI talent.[115] To strengthen Canada's competitiveness in the AI space, Budget 2021 announces a $443.8 million investment in its Canadian Artificial Intelligence Strategy over 10 years, starting in 2021-2022.[116]

Key investment areas listed by the Government of Canada for AI investment-attraction include the following.

Quantum technology: In 2021, the Government of Canada launched a National Quantum Strategy with a $360 million investment to solidify Canada's leadership in quantum research and technologies that will transform technology design and application across all fields. This funding will be used to support quantum research, develop quantum-ready technologies, and grow company and talent.

Hardware, Software, and Semiconductors: Recognizing the importance of the semiconductor industry to the overall economy, the Government of Canada invested a total of $5 million in Hardware Catalyst Initiative Lab (Canada's first state-of-art incubator in the hardware and semiconductor space) in 2019.[117] Such efforts have already attracted international semiconductor companies to set up shop in Canada—last year, Nuvia Inc., a California-based silicon design company, opened its first international office in the Greater Toronto Area with a US$240 million investment. Since then, further investments have been made: earlier in 2021, ventureLAB, a Canadian innovation accelerator, received another $4.7 million from Federal Economic Development Agency for Southern Ontario (FedDev Ontario) to expand Canada's semiconductor capacity and take advantage of the $7 trillion global semiconductor market.

R&D funding for SMEs: Recognizing the importance of SMEs to Canada's job creation and economic growth, the Government of Canada allocated $500 million in Budget 2021 to help SMEs scale up through its Industrial Research Assistance Program that provides both expertise and capital.

115 Cutean et al., Betting on Red and White: International Investment in Canadian AI, ICTC, July 2020, https://www.ictc-ctic.ca/wp-content/uploads/2020/08/ICTC_Report_AI-FDI-7.2.20-ENGLISH.pdf

116 Budget 2021: Building an Innovation Economy of the Future, Government of Canada, https://www.canada.ca/en/department-finance/news/2021/04/budget-2021-building-an-innovation-economy-of-the-future.html

117 "Government of Canada Invests in VentureLAB Expansion to Help Strengthen Canada's Hardware and Semiconductor Sector," Federal Economic Development Agency for Southern Ontario, accessed October 1, 2021, https://www.canada.ca/en/economic-development-southern-ontario/news/2021/03/government-of-canada-invests-in-venturelab-expansion-to-help-strengthen-canadas-hardware-and-semiconductor-sector.html

Remote Working Arrangements and Digital Nomads: A Game Changer for FDI Attraction

The COVID-19 pandemic and resulting lockdowns, travel restrictions, and self-imposed isolation measures have accelerated remote working trends around the world. According to Statistics Canada, in January 2021, 32% of Canadian employees worked most of their hours at home, compared to 4% in 2016.[119] A similar trend exists in the U.S.: in May 2020, 42% of American workers (aged 20-64 earning more than US$20,000) worked full-time at home, compared to just 2% before the pandemic.[120] In Japan, where there was no nationwide lockdown implemented, the remote work jumped from 10% in December 2019 to 28% in May 2020.[121]

While working remotely has gained momentum during the pandemic, the extent of the increase varies widely across different countries, industries, and workers' education. As noted in World Economic Forum's Future of Jobs Report 2020, while only 10-20% of workers in Egypt and Bangladesh are able to work remotely, this figure climbs to 40% for high-income countries like the U.S. and Switzerland due to broader internet access.[122] The extent to which remote work prevailed during the pandemic also differs across industries. Highly digitalized industries achieved higher rates of remote work—an OECD study estimates that about 75% of people employed in the ICT industry can work from home vs. 13% in industries like accommodation, food service, agriculture, forestry, and finishing.[123] According to a recent study by Statistics Canada, there is also a connection between working remotely and education levels. That is, during the pandemic, people with a higher level of education worked from home more so than those with lower education levels. in January 2021, the share of total hours worked from home by employees who have high school diploma or less was 11.4%, compared to 56.9% among employees who have bachelor's degree or higher.[124]

119 Tahsin Mehdi and René Morissette, "Working from Home after the COVID-19 Pandemic: An Estimate of Worker Preferences," Statistics Canada, accessed October 11, 2021, https://www150.statcan.gc.ca/n1/pub/36-28-0001/2021005/article/00001-eng.htm

120 "Does Remote Work Impact Productivity? Here's What Leaders Think," World Economic Forum, accessed October 11, 2021, https://www.weforum.org/agenda/2020/10/does-remote-work-hits-productivity/

121 "Teleworking in the COVID-19 Pandemic: Trends and Prospects," OECD, accessed October 14, 2021, https://www.oecd.org/coronavirus/policy-responses/teleworking-in-the-covid-19-pandemic-trends-and-prospects-72a416b6/

122 "The Future of Jobs Report 2020," World Economic Forum, accessed September 23, 2021, https://www.weforum.org/reports/the-future-of-jobs-report-2020/in-full/executive-summary#executive-summary

123 "Implications of Remote Working Adoption on Place Based Policies: A Focus on G7 Countries," OECD, accessed October 11, 2021, https://www.oecd.org/cfe/implications-of-remote-working-adoption-on-place-based-policies-b12f6b85-en.htm

124 Tahsin Mehdi and René Morissette, "Working from Home after the COVID-19 Pandemic: An Estimate of Worker Preferences."

The Socio-Economic Implications of Remote Working Arrangements

The trend of remote working has brought social, environmental, and economic changes around the world. These include a reduction of traffic flows, a decrease of public transit use, an increase of affordable office space in urban areas, and a rise in the number of suburban communities.

For employees, remote working arrangements allow them to save money from reduced costs for travel, parking, cloths, and food. It is estimated that an employee who works from home roughly 50% of the time can save between $U.S. 600 and $U.S. 6,000 per year.[125]

Remote working arrangements also allow companies to reduce their operating costs. This is attributable to increased productivity, lower real estate costs, reduced absenteeism and turnover, and better disaster preparedness.[126] For example, remote working arrangements allow companies to rethink their real state strategies.[127] More specifically, remote working arrangements incentivize companies to downscale, move part or all of their headquarters out of downtown cores, or switch to virtual organizations. As a result, commercial and industrial real estate in urban areas may become more available and affordable to both domestic and global investors who want to expand their business operations. Broadly speaking, with lower operation costs, it is estimated that an employer can save an average of US$11,000 annually per employee who works remotely half of the time.[128] The money saved on office space can go to supporting an expansion in services, upgrading digital infrastructure, investing in talent or R&D, and entry into new markets.

125 "Latest Work-at-Home/Telecommuting/Mobile Work/Remote Work Statistics," Global Workplace Analytics, accessed October 13, 2021, https://globalworkplaceanalytics.com/telecommuting-statistics . Note: according to Global Workplace Analytics, the saving calculations are the net of additional energy costs and home food costs.

126 "Latest Work-at-Home/Telecommuting/Mobile Work/Remote Work Statistics."

127 "Implications of Remote Working Adoption on Place Based Policies: A Focus on G7 Countries."

128 "Latest Work-at-Home/Telecommuting/Mobile Work/Remote Work Statistics."

Digital Nomads: An Untapped Pool of Digital Talent

Digital nomads are people who historically combined work and vacation ("workcation"), performing work anywhere in the world via computers and internet connections. Unlike immigrants who tend to settle as permanent residents in a foreign country, digital nomads live a nomadic lifestyle, moving from one country to another. Although this type of lifestyle was previously uncommon, it is possible that as the trend toward remote working accelerates and gains permanence, the number of digital nomads will grow.

This presents an opportunity for Canada to both attract investment and bolster its labour force. As discussed in the previous section, the COVID-19 pandemic and resulting travel restrictions have caused a plunge in Canada's immigration, negatively affecting Canada's ability to attract FDI across all industries, including the digital sector. Especially in the absence of a large pool of permanent immigrants to Canada, the emergence of digital nomads may become a game changer.

For a company, having a talent pool of digital nomads around the world at the point of need is a competitive advantage—digital nomads bring best practices from their work experience across the globe, offering skills and insights that are complementary to those brought by the company's domestic talent.[129] Since access to a skilled talent pool of digital workers is a key consideration for global investors when making investment decisions, countries with a talent pool of digital nomads (and taxation policies that can support this type of work structure) have an advantage and are better able to attract and retain FDI.

> *The supply of software developers is truly a problem for our company. Since we went fully virtual during COVID, we were able to enhance our partnerships with programmers around the world.* – VP, a global cleantech company

Additionally, digital nomads can become potential immigrants: after working virtually and living in a country over short or extended periods of time, a digital nomad may decide to become a permanent resident of that country. Countries with policy and taxation mechanisms to support this new style of working stand to benefit.

129 Lara Williams, "Digital Nomads and the Impact on Foreign Investors," Investment Monitor, accessed October 1, 2021, https://investmentmonitor.ai/analysis/rise-digital-nomads-impact-investors

For example, Portugal's digital nomad visa provides a pathway to permanent residency. This distinguishes Portugal from other European countries that offer digital nomad visas and provides it an advantage when attracting freelancers and entrepreneurs from around the world.[130]

Like tourism, digital nomads benefit countries through increased sales, profits, jobs, tax revenues, and income. For this reason, some European countries have issued visas to attract high-income digital nomads. For example, the Caribbean Island of Montserrat launched a new visa, the Montserrat Remote Workers Stamp, allowing digital nomads who earn US$70,000 or more to stay up to a year.[131] Norway also provides a unique visa to attract digital nomads to stay in Svalbard.[132]

On a macro level, the net benefit of remote working arrangements and the emergence of digital nomads remains unclear. While both companies and employees benefit from cost reductions, industries and occupations that rely on foot traffic and traditional office space are facing huge disruptions. The extent to which digital nomads will persist after the pandemic is uncertain due to various reasons, but many argue that it will have some permanence.

Broadening Access to Venture Capital and Government Investments in Tech: Incentivizing Investment from Canada and International Venture Capital Investors

A strong venture capital (VC) industry and government supports are recognized by the global investors interviewed for this study as key levers for investment attraction. The Government of Canada's continued support of the VC industry and digital economy have fostered a business-friendly digital ecosystem, providing both market certainty and financial incentives for investors around the world.

130 "Digital Nomad Visas in EU Countries," EUROPEAN TRAVEL INFORMATION AND AUTHORIZATION SYSTEM, accessed October 11, 2021, https://www.etiasvisa.com/etias-news/digital-nomad-visas-eu-countries

131 Lara Williams, "Digital Nomads and the Impact on Foreign Investors."

132 "Digital Nomad Visas in EU Countries."

Canada's VC Industry

VC is a specialized equity financing mechanism through which VC companies invest both physical capital and human capital in startups that are deemed to have high growth potential. Leveraging resources provided by VC investors, startups are able to develop their ideas into marketable products.[133]

For a country, investing in and attracting startups before they grow big has a profound impact on its economy—if a country cannot convince Amazon to establish its international headquarters within its border, it can try to attract the "next Amazon" to open its first foreign headquarter within the country. This is especially true considering that the world's fastest-growing companies have become younger over the past two decades (e.g., Tesla, Facebook). Therefore, building a strong VC ecosystem to attract startups and FDI is a key policy priority for many countries.

Canada's VC ecosystem has gained substantial growth in the last decade. Prior to the pandemic, Canada registered a new record in total VC investment of $6.2 billion in over 560 deals in 2019.[134] Foreign investment plays an important role in Canada's VC industry, making up 40% of total VC investment (for late-stage startups, this share increases to 50%).[135] Additionally, due to the relatively small size of Canadian VC funds, businesses in capital-intensive industries (e.g., clean tech and biotech) have to rely on foreign capital to move along the development path.[136]

Amid the pandemic, Canada's VC ecosystem demonstrated strong resiliency. With $4.4 billion over 509 investment deals in 2020, Canada's VC investment registered the second-highest level of annual VC since 2011.[137] The resiliency demonstrated by Canada's VC ecosystem can be attributed to two factors: the strong adaptability inherent in the industry and supportive government policies and programs.

While some VC investors interviewed chose to cross the Canadian border and endure a quarantine in a hotel so as to meet with the start-up team in person, COVID prompted many investors to adapt, including making deals over Zoom.

133 "Venture Capital Catalyst Initiative - SME Research and Statistics," Government of Canada, accessed October 14, 2021, https://www.ic.gc.ca/eic/site/061.nsf/eng/h_03052.html

134 "Year End - 2020 - Canadian VC & PE Market Overview," Canadian Venture Capital Private Equity Association (CVCA), accessed October 14, 2021, https://www.cvca.ca/research-insight/market-reports/year-end-2020-canadian-vc-pe-market-overview/

135 "Canada's Venture Capital Landscape," Business Development Canada (BDC), accessed October 14, 2021, https://www.bdc.ca/en/about/analysis-research/canada-venture-capital-landscape

136 "Canada's Venture Capital Landscape."

137 "Year End - 2020 - Canadian VC & PE Market Overview."

I think COVID-19 made us incredibly conservative in terms of our diligence process. We still need to find profitable investments, so we have had to find a way to pick good companies even when we can't go and spend our standard 48 to 72 hours sitting with the team and learning about them and seeing how their office works and all of that stuff. It's not about the horse [the idea], it's about the jockey [the founder/s]. If we cannot get to know the entrepreneurs in person, it just means we have to get to know them over Zoom. Even if this takes twice as much time. – Managing Director, a fintech venture capital group, USA

International travel has come to almost a stop [because of COVID-19]... it's amazing how international teams have adapted to Zoom. In the past, we would have to jump on a plane and travel for three days to do a contract or a deal. – Investor, transportation, Korea

Recognizing the importance of VC in building a strong digital economy, the Government of Canada has launched several funding programs to strengthen its VC industry. For example, it introduced the Venture Capital Catalyst Initiative (VCCI) in Budget 2017 and expanded the funding of Canada's VC industry in the 2018 Fall Economic Statement by $371 million. Building on the momentum of the VC industry, Budget 2021 added $450 million to the VCCI to ensure "Canadian businesses continue to enjoy access to a globally competitive venture capital ecosystem capable of nurturing entrepreneurial talent and creating high-quality, middle-class jobs."[138]

Canadian Tech Startups Play a Key Role in Attracting Investment

In 2020, ICT companies received the largest share (55%) of total VC invested in Canada ($2.4 billion across more than 284 deals).[139] The strong performance of the ICT industry can be attributed to the growing importance of IT, the accelerated digitalization across industries, and the ability to generate and leverage insights from data. All of these have become core competencies for new businesses.[140] Furthermore, IT-focused business models are easier to scale up and tend to be lighter capital requirements.[141]

138 "Venture Capital Catalyst Initiative - SME Research and Statistics."
139 "Year End - 2020 - Canadian VC & PE Market Overview."
140 "Canada's Venture Capital Landscape."
141 Ibid.

Canada's world-class R&D centres, universities, leading tech industries like AI and Big Data, strong government supports, efforts to address environmental issues, and accelerated digitalization across industries, put Canada in an advantageous position for digital FDI attraction.

Government Supports Provide Both Financial Incentives and Market Certainties

In addition to programs and incentives that support green tech and green energy adoption (e.g., the iZEV program and the Net Zero Accelerator program) and the VC industry (e.g., VCCI funding), the Government of Canada launched programs to support various sectors across the digital economy. This adds both financial incentives and market certainties to global investors. In its latest budget, the federal government also announced its intention to create a market-oriented and operationally independent federal innovation and investment agency. Endowed with $1 billion in funding over five years, the agency will help Canadian businesses and industries make investments in research and innovation, and adopt new technologies to stay competitive in the global economy while creating jobs for Canadians.[142]

[In Canada,] programs like Industrial Research Assistance Program (IRAP) and Scientific Research and Experimental Development (SR&ED) are huge, and nothing like that exists in the US. – Managing Director, Fintech Venture Capital, USA

142 Department of Finance Canada, "Chapter 2," April 7, 2022.

SECTION IV

A Pathway Forward for Attracting FDI Toward Canada's Digital Economy

In this section, levering key findings and insights from KIIs and secondary research, a SWOT analysis is conducted, detailing Canada's **strengths**, **weaknesses**, **opportunities**, and **threats** when attracting FDI toward its digital economy. On the basis of the SWOT analysis, policy implications are provided to policymakers and business leaders for consideration when drafting FDI-attraction policies and strategies.

SWOT Analysis

Strengths

Canada's digital economy outperformed other sectors and demonstrated resilience during the pandemic. Canada's digital resilience was considered by investors in this study as a key strength in attracting FDI and supporting overall economic recovery.

The following is an overview of Canada's core strengths in digital FDI attraction.

1. Recognizing that the future of health is digital: Canadian hospitals have demonstrated strong adaptability during the pandemic—digital technologies and networks were quickly adopted to enable telehealth and virtual care. Interviewees from the healthcare sector recognized various provincial government efforts to radically reduce timelines within procurement processes, which normally take three years or more, and enable hospitals to quickly acquire the technology and networks needed to provide virtual care.

2. Adapting investment processes to digital by default: Communication technologies such as Zoom and Microsoft Teams were quickly adopted among investment promotion agencies(IPAs) and venture capital investors, which helped ensure business operation despite travel restrictions and border controls amid the pandemic.

3. A Commitment to open borders despite growing protectionism: Canada's immigration system and policies are among the finest in the world, enabling businesses across digital industries to find internationally trained and skilled talent. For example, the Federal Skilled Worker (Express Entry) program was highly regarded among interviewees. Despite a slowdown in entrant numbers during 2020 due to pandemic restrictions, interviewees expressed Canada's openness and commitment to attracting high volumes of digitally skilled immigrants to be an attractive feature.

4 Canada's highly educated labour force: In addition to skilled international workers, Canada's digitally skilled domestic talent pool was regarded as an essential component to FDI by interviewees. Additionally, relatively lower wages compared to the U.S. was considered a competitive advantage for Canada to grow tech startups and attract larger foreign companies.

5 Government programs offering market certainties and incentives: Programs and recent regulations developed by the Government of Canada were seen as key to attracting foreign investors. Examples of core interventions are the following:

Green tech and green energy—environmental regulations (e.g., CORSIA, IMO2020, the Canadian Net-Zero Emissions Accountability Act) and incentives (e.g., the iZEV program and Net Zero Accelerator Initiative) provide both market certainties and financial incentives for potential investors to invest in Canada's green economy.

All digital industries—the Industrial Research Assistance Program and the Scientific Research and Experimental Development (SR&ED) program were highly regarded among interviewees for their funding amounts and inclusivity.

6 A competitive corporate tax rate: Canada's corporate tax rate is competitive among G7 countries, giving it a significant advantage in attracting FDI toward the digital economy, and perhaps especially the growing advanced-manufacturing sector. Canada's METR (marginal effective tax rate) is the lowest in the G7 and below the OECD's average. Compared to the U.S., Canada has a relative tax advantage of 4.7 percentage points in overall METR, and the manufacturing sector's average METR 16.4 percentage points below that of the U.S. counterpart.[143]

Weaknesses

Policymakers and businesses should also be aware of potential challenges to FDI pull factors (e.g., market size, digital infrastructure, and investment climate) for FDI attraction, which can push Canada into a disadvantageous position. Some of the core weaknesses for attracting FDI toward its digital economy post-COVID include the following.

144 "Marginal Effective Tax Rates."

1 Relatively small domestic market: Despite digital resiliency and several other advantages seen in Canada's FDI attraction potential during the pandemic, some interviewees still noted that Canada ultimately represents a relatively small domestic market. With a total population accounting for just 0.5% of the global total, Canada's market size can be seen as a disadvantage in attracting investment, especially for market-seeking FDI. Some interviewees also reiterated that investors may have concerns over limited acquirers when exiting a Canadian investment, potentially causing hesitation to invest in Canada in the first place. All of this points to an opportunity to better highlight Canada's trade openness and its active free trade agreements (such as Comprehensive and Progressive Agreement for Trans-Pacific Partnership [CPTPP],[145] Comprehensive Economic and Trade Agreement [CETA],[146] and Canada-United States-Mexico Agreement [CUSMA][147]) that allow businesses in Canada to access over 1.5 billion consumers worldwide with little to no trade friction.

2 A lack of tax information: Despite competitive corporate tax rates, some interviewees found Canada to have limited information related to its taxation system, preventing potential investors from making informed decisions. Some interviewees voiced their concerns over FDI taxation policy and what they felt was the very real possibility of paying "double taxes" when investing in Canada.

3 Conservative business climate: Canadian venture capital companies are perceived as being conservative among tech startups. Some interviewees found it was more difficult to access venture capital in Canada compared to in the U.S. and voiced their concerns over longer valuation and waiting periods. As a result, some tech startups ended up leaving for the U.S. to get access to capital.

4 ICT FDI restrictions: Canada's ICT sector has the highest FDI restrictiveness coefficient among OECD countries, posing barriers for Canada to attract FDI for its capital-intensive digital industries like 5G, green tech, green resource, and semiconductors.

5 Lagging 5G adoption: 5G networks are crucial digital infrastructure for enabling other digital technologies, networks, and applications such as the IoT, smart cities, and autonomous vehicles.

145 Global Affairs Canada, "Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP)," GAC, November 27, 2015, https://www.international.gc.ca/trade-commerce/trade-agreements-accords-commerciaux/agr-acc/cptpp-ptpgp/index.aspx.

146 Global Affairs Canada, "Canada-European Union Comprehensive Economic and Trade Agreement (CETA)," GAC, April 25, 2016, https://www.international.gc.ca/trade-commerce/trade-agreements-accords-commerciaux/agr-acc/ceta-aecg/index.aspx

147 Global Affairs Canada, "Canada-United States-Mexico Agreement (CUSMA)," GAC, August 15, 2014, https://www.international.gc.ca/trade-commerce/trade-agreements-accords-commerciaux/agr-acc/cusma-aceum/index.aspx

However, Canada lags behind leading countries in 5G adoption and internet speeds due to a confluence of factors, including limited access to spectrum, outdated antenna regulations, slow consumer adoption, and FDI restrictions in the ICT sector. Interviewees voiced concerns about Canada's slow 5G rollout. While they did not believe this to be an immediate or short-term concern, several suggested long-term impacts to Canada's ability to attract digital FDI if 5G rollout is not prioritized.

Opportunities

The COVID-19 pandemic and other prominent trends have led to disruptions in economic activities but also created investment opportunities across a number of digital industries.

Below are a few of the top FDI attraction opportunities in Canada's digital economy.

1. Health Tech: The healthcare sector has demonstrated strong adaptability in utilizing virtual care and telehealth enabled by digital technologies and networks. The adoption of virtual care and remote services is likely to stay after the pandemic, bringing FDI opportunities in developing and expanding digital infrastructure and health tech. Additionally, in response to the COVID-19 pandemic and increasing demand for healthcare, governments are forced to reconsider costly and lengthy procurement processes in the healthcare sector, creating a more efficient business environment for both domestic and foreign businesses and investors.

2. Green economy: Stricter environmental regulations and government incentives have brought investment opportunities to Canada's green tech and green energy sector. A high consumer awareness of environmental issues has also propelled a growing domestic market for green tech and green energy, which further attracts businesses and FDI toward Canada's green economy.

3. Digital products and services: As digital adoption and transformation continue to accelerate in the post-pandemic era, demand growth is expected in information technology equipment, e-commerce transactions, and digital deliveries of products and services to consumers. A larger market size and market growth potential is set to increase Canada's ability to attract FDI to its digital economy.

4 Attracting scale-ups and startups: The OECD-led global tax reform effectively reduces the competitive advantage of tax havens that provide the lowest tax rates, which provides additional FDI opportunities for Canada to attract both tech giants like Google and Amazon and tech startups that would otherwise seek tax havens.

Threats

The COVID-19 pandemic and travel restrictions have led to disruptions in labour supply and global supply chains, creating huge uncertainties in economic activities and business operations, some of which may discourage investment and business expansion.

Putting aside what seems to be a looming recession, the following are some of the biggest threats to FDI attraction in Canada's digital economy. Although not uniqe to Canada, these threats are ones that Canadian policymakers and investment-attraction agencies should be mindful of.

1 General COVID-19 uncertainties and by-products: While accelerating the adoption of digital technology in the healthcare sector, COVID has also created additional complexities. Patient visits were commonly delayed or skipped in discretionary healthcare, creating a challenging business environment in areas like ophthalmology and dentistry. Moreover, long-term impacts and associated costs of "long COVID" are yet uncertain, creating potential care challenges in the future. A challenging business environment along with uncertainties brought on by COVID-19 variants may further discourage investment and business expansion, including in Canada.

2 International talent bottleneck: Tech companies that rely on internationally trained digital workers found it challenging to source digital talent due to limited labour supply caused by travel restrictions and boarder controls. Delays in accessing international talent may weaken Canada's strength in skilled labour (domestic and foreign), which is key to attracting FDI toward its digital economy.

3 Disruptions in global supply chains: COVID-19 supply chain bottlenecks and blockages have resulted in shortages of key components such as semiconductors, which affects businesses across digital industries, including advanced manufacturing, ICT, green tech, healthtech, and IoT. As a result, investors may hesitate to make investments or expand to other markets while critical shortages like this persist.

Policy Considerations

The following represent key considerations for bolstering Canada's ability to attract and retain high-quality FDI in the digital economy. These insights are based on the collection of primary and secondary research conducted throughout this study.

1 Showcase Canada's resilient digital economy when launching advertising and marketing campaigns for FDI attraction:

- Canadian businesses demonstrated resilience and adaptability by using digital technologies in their business operations, which was recognized by investors as a key strength in FDI attraction and retention. Therefore, the resilience of Canada's digital economy should be showcased in marketing materials for FDI attraction.
- Furthermore, Canada's accommodating immigration policy, highly educated labour force, competitive tax rates, and financial incentives should be highlighted in targeted advertising and marketing campaigns.

2 Address problems pertaining to Canada's ability to attract FDI toward its digital sector:

- Efforts should be made to dispel misperceptions (e.g., paying double taxes when investing aboard) and providing accurate and compelling information to global investors.
- Additionally, recognizing the importance of venture capital is key to retaining and growing tech startups. Policymakers and investment promotion agencies (IPAs) may support programs that connect early-stage companies to Canadian and international venture capital investors. For instance, the Government Canada renewed the Venture Capital Catalyst Initiative in Budget 2021, investing $450 million for Canada's high-potential innovative firms.[148] Similar programs should focus on priority digital industries, including clean tech, health tech, and agri-foods and agtech.

148 "Designing the Renewed Venture Capital Catalyst Initiative - SME Research and Statistics," Innovation, Science and Economic Development Canada, accessed September 30, 2021, https://www.ic.gc.ca/eic/site/061.nsf/eng/03143.html

3 Maximize investment-attraction opportunities in Canada's green tech and green energy, health tech, and digital infrastructures industries:

- Recognizing investment diversification is instrumental in hedging risks from shocks. Effort should be made to attract FDI toward fast-growing industries from fast-growing markets in Indo-Pacific region while leveraging opportunities that flow from trade agreements such as Comprehensive Economic and Trade Agreement, Canada-United States-Mexico Agreement, and Comprehensive and Progressive Agreement for Trans-Pacific Partnership.

- Furthermore, effort should also be made toward expanding existing supply chains and incentivizing reinvestment among existing foreign investors by leveraging supportive government policies and programs for digital industries.

4 Mitigate threats that may hinder Canada's ability to attract FDI toward its digital economy:

- Recognizing COVID-19-induced disruptions have an uneven impact across digital industries, policy efforts should focus on industries most affected to ensure an inclusive recovery. While it is important to capitalize on the opportunities of the digital economy, uneven or "k shaped" recoveries may eventually create a more challenging business environment and discourage global investors.

- Additionally, the emergence of COVID-19 variants and the drop in immigration may lead to a brain drain in the tech sector, which may discourage global investors. Policymakers and the business community should be proactive and adjust talent attraction strategies in light of reduced immigration and the emergence of digital nomads. For example, Helsinki Business Hub (a city-owned company supporting trade and talent) launched a 90-Day Finn campaign inviting tech professionals, entrepreneurs, and investors from all around the world to live in Helsinki, Finland for three months. Amid the pandemic, more than 5,300 professionals submitted their applications, expressing interests in living, working, and starting businesses in the city.[149]

- Furthermore, recognizing that global semiconductor supply chain disruptions have profound impacts on Canada's digital sector, effort should be made to diversify existing supply chains and to secure new market access for Canadian companies.

149 Lara Williams, "Digital Nomads and the Impact on Foreign Investors."

Conclusion

This study discusses COVID-19-induced impacts on Canada's ability to attract FDI toward its digital economy, while taking into consideration new dynamics brought on by prominent trends, including stricter environmental regulations, accelerated digital adoption across industries, the OECD-led tax reform, and the backlog in immigration. Based on interviews with business leaders, potential investors, and subject matter experts, this study identifies significant FDI opportunities in Canada's digital economy, including fast-growing subsectors like clean tech, health tech, and agri-foods and agtech. Other opportunities exist in the context of innovative tax developments and talent strategies that potentially attract digital nomads. A SWOT analysis details the strengths and weaknesses pertaining to Canada's ability to attract FDI toward its digital economy and highlights the opportunities and threats that governments and business leaders should be aware when making policy and investment decisions.

Overall, the COVID-19 pandemic significantly impacted the flow of FDI around the world, and Canada was not spared this fate. Yet, a silver lining is the impressive resilience and investment-attraction potential of the digital economy as it permeates all sectors in Canada and drives future growth and prosperity. Canada's digital resiliency was seen by interviewees as core to its capacity to attract investment post-COVID and beyond. Broadcasting this strength represents a robust opportunity for Canada to emerge from the pandemic and secure high-quality FDI to propel inclusive and sustainable future prosperity.

Appendices

A Technical Notes

1 FDI flows capture the amount of cross-border transactions related to direct investment during a given period of time, usually a quarter or full year. As such, flows are useful for assessing recent developments in FDI. For example, flows give an indication of the amount of direct investment foreign investors are undertaking at a given point in time, so the direction of change in these flows can indicate whether the investment climate is improving or not. FDI flows consist of equity transactions, reinvestment of earnings, and intercompany debt transactions.

2 FDI stocks represent the accumulated value of FDI measured at a given point in time, usually the end of a quarter or of full year. The change in FDI stocks from one point in time to the next is due not only to the financial flows during the period but also to changes in prices, exchange rates, and other changes in value, such as the write-down of assets. Looking at how FDI stock changes over time, gives an indication of structural changes in the economy, such as opening up to foreign investment.

B Research Methodology

This study uses a mix of qualitative and quantitative research methods, including a literature review and review of secondary datasets, and 41 interviews with investors, business leaders, investment promotion agencies and other subject matter experts from around the world.

Primary Research

ICTC conducted a total of 41 key informant interviews with an internationally diverse group of participants. Interviewees were selected as either high-level experts in FDI and the digital economy or investors who expect to, or have already made, investments in Canada. Each interview was approximately one hour, discussing pre-identified questions related to COVID-19 and impacts on business activities, growth and expansion plans, areas of future priority, and perceptions of Canada as a market for business. All interviews were conducted between December 2020 to June 2021.

The interviewees served as proxies for their organizations and serve as a key component of this study. Interviewees were selected based on company types, company headquarters, their roles, and investment knowledge.

Interviewees were from 13 countries. ICTC gathered insights from private sector companies (83%) and civil-sectored organizations (17%). Interviewees ranged from government, ICT, digital health, and finance organizations. Chart 6 and Chart 7 provide the relevant breakdowns.

CHART 6

Interviewee company headquarter location

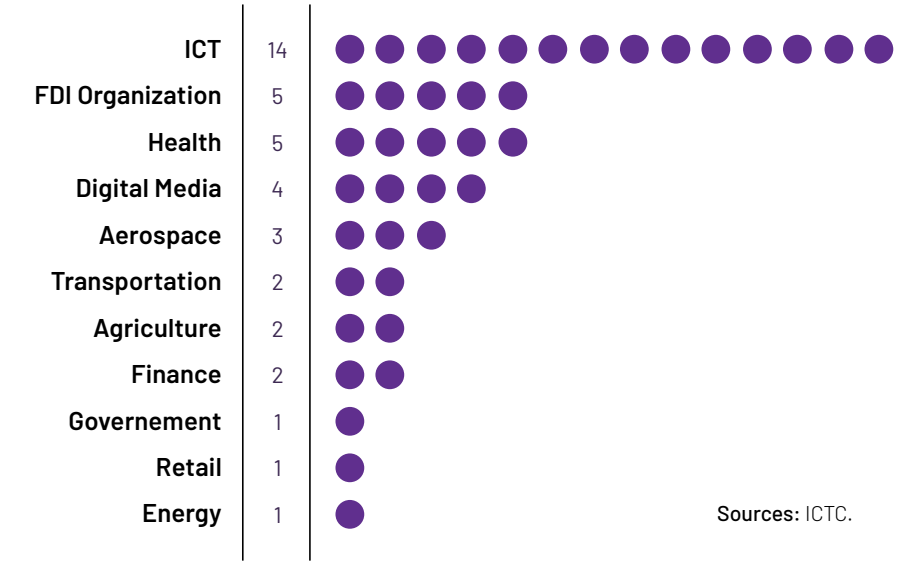
Number of companies

Sources: ICTC.

CHART 7

Interviewee Company by Core Industry Area

Number of companies



Sources: ICTC.

To respect the privacy of interviewees, all insights gathered from interviews in this study are displayed in aggregate only, with no personal identifiers. Any quotes gathered during the interview in this report protect the confidentiality of interviewees and organizations.

Secondary Research

A thorough review of existing literature was initially conducted to guide this study, which helped identify key topics and research questions. To support this study, ICTC gathered data and literature from Statistics Canada, OECD, Statista, and UNCTAD.

C Limitations of Research

While ICTC attempted to mitigate biases and ensure the research process was exhaustive, unavoidable limitations exist. ICTC recognizes that conducting 41 interviews is not a large enough sample to generate consensus on the topic of digital economy investment in Canada. Therefore, the global feedback gathered in this report should be interpreted as informed insights, not necessarily as objective trends.

At the time of publication, there is a general consensus that Canada will soon enter a recession, which has the potential to become severe over time. However, the research and analysis informing this study was conducted between December 2020 and June 2022. As a result, robust analysis of the implications - including potential strengths, weaknesses, opportunities, and threats - of this anticipated change is not available in this report. Volatile economic circumstances related to a looming and potentially severe recession, coupled with continued geopolitical tensions, supply chain bottlenecks, and climate change represent significant opportunity for further research and analysis vis a vis the relationship to FDI.