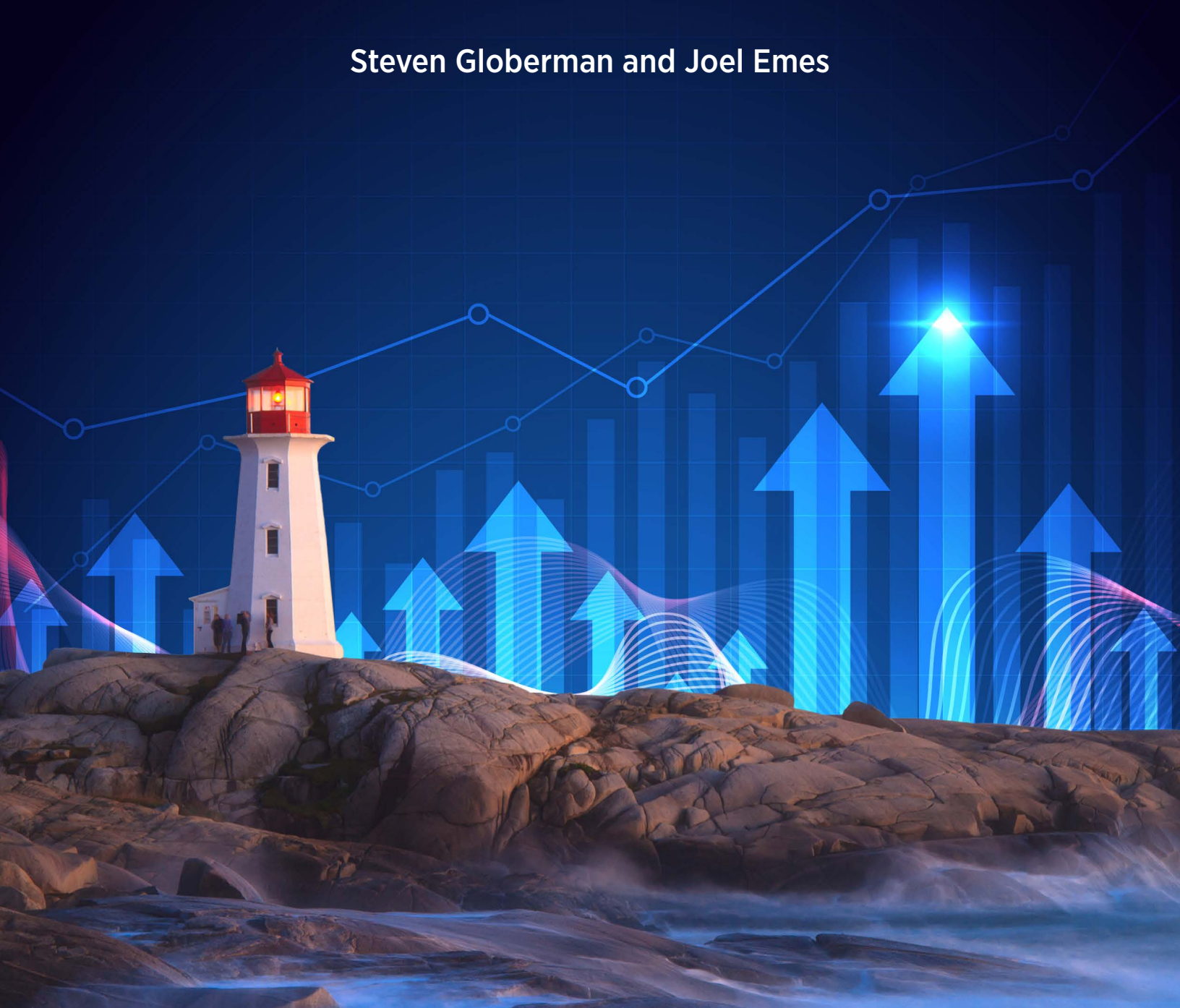


PROMOTING CAPITAL INVESTMENT IN ATLANTIC CANADA

An Imperative for Prosperity

Steven Globerman and Joel Emes



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Executive Summary

The Atlantic Canada provinces, especially the three Maritime provinces, have suffered below-average real economic growth for decades. Relatively weak rates of growth of business investment also characterize the region and are a major cause of the region's relatively slow economic growth compared to other provinces. In addition, Atlantic Canada has a less well-educated and skilled workforce than do other provinces. Since human capital is a critical input to productivity growth, as are investments in plant and equipment and intellectual property products such as software, and since productivity growth underlies improvements in standards of living, stimulating investment in physical and human capital is a prerequisite to improving real economic growth in Atlantic Canada.

Federal and provincial governments have implemented various programs over time to promote investment in Atlantic Canada including generous investment tax credits. However, other income support programs such as Equalization and Employment Insurance that are especially generous to the Maritime provinces have arguably undermined incentives on the part of public and private sector institutions to move those provinces toward greater economic self-sufficiency. In addition, relatively high personal income tax rates discourage the inflow and retention of highly educated workers, while an unwelcoming attitude on the part of provincial governments toward resource-based investments has turned away billions of dollars of private sector investments in recent years.

It is the case that Atlantic Canada faces challenges to attracting investment, particularly its relatively small urban populations which limit the region's potential to leverage the benefits of what are called "agglomeration economies." The latter are efficiency advantages arising from large labour markets which facilitate employment specialization and technology spillovers across firms participating in those geographic markets, among other things. A relatively small domestic market also means that companies located in Atlantic Canada will, in many cases, need to be successful exporters in order to achieve minimum efficient size.

There is a debate in the literature concerning whether the emergence and growth of the "digital economy" accentuates or attenuates the economic advantages enjoyed by service sector firms located in large metro-

politan areas. However, there is evidence that small and medium-sized firms located in smaller urban centres can leverage the use of the Internet to export services in sectors such as finance, entertainment, education, and software development among others. Firms that are successful in this regard are characterized by a strong commitment to export and a willingness to take financial and other risks in order to grow.

Ireland's economic experience also provides suggestions for how the Atlantic provinces might encourage investment-led real economic growth. The Irish "economic miracle" reflects a combination of factors. One prominent factor was a substantial reduction in the size of the public sector. This freed labour and other domestic inputs to move into the private sector. The Atlantic provinces have relatively large public sectors as measured by government expenditures as a share of provincial gross domestic product and public sector employment as a share of total employment. As a consequence, private sector organizations find skilled employees expensive to hire, since they must be bid away from government employers. Economic reforms in Ireland also featured reductions in tax rates and deregulation. Lower tax rates in particular attracted highly educated workers to Ireland including many who had previously emigrated from Ireland. Investments in secondary education increased the supply of skilled employees, which encouraged physical capital inflows, especially on the part of foreign-owned firms, while investments in port and telecommunications infrastructure mitigated the disadvantages of physical distance from foreign markets.

It is certainly true that the effects of economic reforms in one country or region may not be replicated in other locations given political, cultural, and other institutional differences. However, it is generally the case that incentives matter. In the case of Atlantic Canada, there are strong incentives in place that discourage investment in physical and human capital and, therefore, that discourage private-sector-led economic growth. If the region is to move away from a reliance on transfer payments from the rest of Canada in order to enjoy a high standard of living, the incentive system needs to be changed.

1. Introduction

Atlantic Canada has suffered below-average economic growth for decades. As a consequence of its sub-par economic growth, as well as low per-capita income levels at the start of the federal government's Equalization Program, the Atlantic provinces have been heavily reliant upon federal government fiscal transfers to pay for social services and employment insurance benefits.¹ McMahon (2021) reports that from 2007 to 2019, Ottawa spent \$423.2 billion and raised revenues of \$226.5 billion for a net transfer of \$196.7 billion to the Atlantic provinces.² Equalization payments to Atlantic Canada were \$1,708 per person, about a quarter of the net federal transfers to the region of \$6,704 per person. In inflation-adjusted terms, the average net transfer to the Atlantic provinces increased over the period covered by McMahon's study attesting to the region's worsening "have-not" status. Furthermore, Eisen, Whalen and Palacios (2021) report that Prince Edward Island, New Brunswick, and Nova Scotia are the most reliant of any province on federal transfers to fund their programs.

The urgency of improving economic prosperity in Atlantic Canada is heightened by the potential for the federal government to reduce transfer payments to the Atlantic provinces given the large and growing outstanding federal government debt which will need to be financed in an environment of likely higher interest rates than has been the case in recent decades.³ To the extent that the fiscal burden facing the federal government increases because of rising costs of government debt relative to government tax revenues, the current inflation-adjusted values of federal government transfers to the Atlantic provinces may not be sustainable.

Tombe (2020) also highlights the extent to which the future fiscal positions of the Maritime provinces (New Brunswick, Prince Edward

¹ Beginning in 1957, the federal government has made payments funded from general revenues to provincial governments to help address fiscal disparities among Canadian provinces based on provinces' ability to generate tax revenues.

² All reported amounts are in inflation-adjusted 2018 dollars.

³ Increased inflation over the foreseeable future makes it likely that interest rates on government debt will be higher than they were in recent decades. For a discussion of the future outlook for higher inflation, see Globberman (2021).

Island and Nova Scotia) are dependent on federal government equalization transfers and how Newfoundland & Labrador faces the largest future provincial government fiscal gap of all provinces.⁴ Both Tombe and Eisen, Whalen, and Palacios identify a rapidly aging population in Atlantic Canada as contributing to its precarious fiscal position given the prospect of rising health care costs and a declining labour-force participation rate, and they also underscore the importance of improving the economic growth rates of the Atlantic provinces to sustain those provinces' finances.

Accelerating the rate of real economic growth in the four Atlantic Canada provinces is therefore becoming an even greater imperative. Zeng (1997), among others, highlights physical and human capital accumulation and technological changes driven by innovation as two integrated elements in promoting economic growth.⁵ Besides contributing directly to economic growth, physical and human capital are also essential factors in research and development activities and in applying the new technologies resulting from successful research and development to production.

Given the importance of promoting the rate of growth of both physical and human capital accumulation in Atlantic Canada to improving that region's future rate of real economic growth, this study identifies and discusses policies that promise to promote investment in the Atlantic provinces. By way of background, it also presents data highlighting the generally slower rate of physical capital investment in those provinces compared to the rest of Canada, as well as data identifying a human capital gap between the Atlantic provinces and the rest of Canada.

The study proceeds as follows. Section 2 presents historical data on real economic growth and physical capital accumulation in the four Atlantic provinces compared to other Canadian provinces. Section 3 provides information on the educational level and the quality of the educational systems in Atlantic Canada compared to other regions in Canada, which provides an admittedly incomplete, albeit relevant insight into human capital levels in Atlantic Canada relative to the rest of Canada. Section 4 provides an overview and critique of past and current government programs to promote capital investment in Atlantic Canada, as well as a discussion of policy approaches that are more likely to have a positive influence on investment behaviour in that region. Concluding comments are provided in the study's final section.

⁴ The fiscal gap is measured as future provincial government interest payments as a share of total provincial income.

⁵ Human capital refers to the knowledge, skill levels, and expertise that workers in an economy possess.

2. Economic Growth and Physical Capital Investment in Atlantic Canada

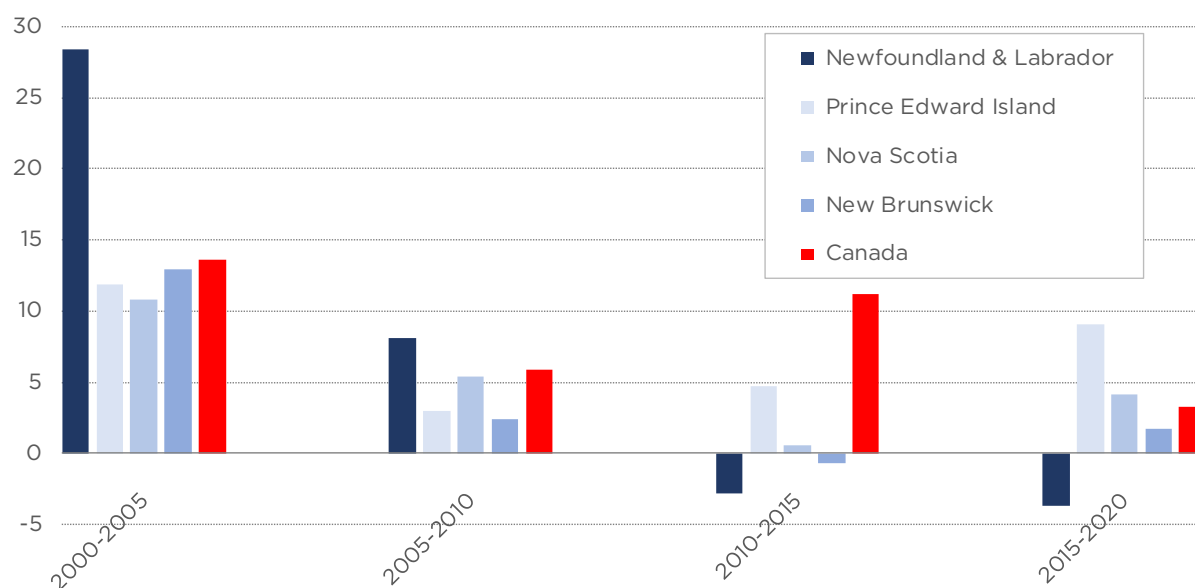
Figure 1 reports the real economic growth rates of the four Atlantic provinces compared to the real growth rate of all Canadian provinces plus territories for sub-periods from 2000 to 2020.⁶ With four exceptions, the growth rates of each of the Atlantic provinces trailed the national growth rate in the various sample periods.⁷ From 2000 to 2010 Newfoundland & Labrador was the best performing Atlantic province in relative real economic growth, although it was the worst performing province from 2011 to 2020. As we shall discuss in a later section, Newfoundland & Labrador's real economic growth rate is heavily influenced by the investment performance of the energy sector.

As noted in the introduction, capital investment is a critical input to real economic growth. While numerous studies have identified a significant decrease in physical capital investment in Canada, particularly in the post-2014 period, Globerman and Emes (2020) also found substantial variation in capital investment behaviour across provinces. The broadest measure of capital investment they examined was the change in the end-of-year net stock of residential and non-residential assets in 2012 constant prices (i.e., the change in the net capital stock). Table 1 summarizes their estimates of the compound annual growth rate (CAGR) in this measure of capital investment for three separate periods: 1990-2018, 1990-2014, and 2014-2018.⁸ Since they were interested in the relative performance of indi-

⁶ The growth rates are calculated and expressed as the percentage changes from the beginning of the sub-period to the end of the sub-period. Real economic growth is based on changes in real GDP production-based measures.

⁷ The exceptions are Newfoundland & Labrador from 2000-2005 and 2006-2010; Nova Scotia from 2006-2010, and Prince Edward Island from 2016-2020. Note that the Atlantic provinces are included in the growth rate estimates for Canada. Hence, their relative growth performances would be worse than reported in table 1 if the comparator for Canada excluded those provinces.

⁸ The last year of available data for their study was 2018. As well, 2014 marked the start of a significant slowdown in capital investment in Canada.

Figure 1: Growth of GDP (Percentage 2012 Chained Prices)

Source: Authors' calculations from Statistics Canada (2022a), Table 36-10-0402-01; and Statistics Canada (2022b), Table 36-10-0104-01.

vidual provinces, they standardized CAGR for each province by the CAGR for Canada as a whole. Hence, the estimates in table 1 report the index values for each province with the value for Canada set equal to 100.

One notable observation from table 1 is the dramatic improvement in the relative investment performance of Newfoundland & Labrador from 2014 to 2018.⁹ A second is the major deterioration in the relative investment performance of Alberta during that period primarily due to a decline in investment in that province's oil and gas sector.¹⁰ The increase in the net capital stock for Nova Scotia and New Brunswick was consistently below the national average, while the increase for Prince Edward Island remained modestly below the national average in each period.

Tables 2 and 3 provide comparable data as in table 1 but for fixed residential assets (table 2) and fixed non-residential assets (table 3) as

⁹ Globerman and Emes (2020) report that the bulk of the increase in physical capital investment in Newfoundland & Labrador was in engineering construction in the conventional oil and gas industry and engineering construction in utilities.

¹⁰ Newfoundland & Labrador's oil and gas exploration and production sector suffered a decline in investment, as did Alberta's oil and gas sector. However, the oil and gas sector is a larger share of Alberta's economy than is the case for Newfoundland & Labrador.

**Table 1: Index Values for Net Capital Stock
(2012 Constant Prices)**

	1990-2018	1990-2014	2014-2018
Canada	100.0	100.0	100.0
Newfoundland & Labrador	123.4	111.1	224.3
Prince Edward Island	93.7	93.0	99.3
Nova Scotia	61.9	60.9	70.4
New Brunswick	73.5	78.0	36.3
Quebec	74.8	74.6	75.6
Ontario	83.6	79.4	117.8
Manitoba	81.3	72.9	150.4
Saskatchewan	105.1	107.6	84.8
Alberta	149.7	161.8	52.6
British Columbia	132.8	128.8	165.7

Source: Globerman and Emes (2020), table 2.

reported in Globerman and Emes (2020). The data reported in Tables 1 through 3 show that with respect to physical capital investment, the Atlantic provinces, with the exception of Newfoundland & Labrador, consistently underperformed the country as a whole, particularly with respect to investment in fixed non-residential assets. Since the latter asset category includes machinery and equipment and intellectual property products such as software, the underperformance in investment in that asset category has arguably contributed to below-average growth of productivity and real incomes in Atlantic Canada.

While the relatively poor investment performance of the Maritime provinces reported in tables 1 to 3 undoubtedly contributed to the relatively slow economic growth of those provinces shown in figure 1, it is also possible that slow economic growth discouraged investment in those provinces. Faster exogenous economic growth in other provinces compared to the Maritime provinces may have contributed to slower capital investment in the latter provinces compared to the average national performance.

Table 4 sheds some light on this possibility. It also updates the data reported in tables 1 to 3. Specifically, it reports the ratio of gross fixed capital investment as a share of GDP for each province relative to the ratio for Canada through 2020. The data reported are index numbers with the index value for Canada set equal to 100. The ratios therefore implicitly hold constant the influence that differences in the growth of GDP in each period might have had on gross fixed capital investment. In fact, the data in table

**Table 2: Index Values for Net Capital Stock
(Fixed Residential, 2012 Constant Prices)**

	1990-2018	1990-2014	2014-2018
Canada	100.0	100.0	100.0
Newfoundland & Labrador	83.5	90.9	38.6
Prince Edward Island	105.6	103.5	118.7
Nova Scotia	89.7	91.9	76.1
New Brunswick	94.5	100.8	56.6
Quebec	82.1	83.3	75.0
Ontario	90.3	89.7	93.6
Manitoba	75.0	70.5	102.5
Saskatchewan	68.2	66.1	80.7
Alberta	132.4	135.4	113.9
British Columbia	163.0	161.9	169.6

Source: Globerman and Emes (2020), table 4.

**Table 3: Index Values for Net Capital Stock
(Fixed Non-Residential, 2012 Constant Prices)**

	1990-2018	1990-2014	2014-2018
Canada	100.0	100.0	100.0
Newfoundland & Labrador	157.9	128.3	563.1
Prince Edward Island	76.0	80.0	21.8
Nova Scotia	29.1	28.3	39.9
New Brunswick	54.0	58.9	-11.6
Quebec	60.6	61.0	53.8
Ontario	67.8	61.0	158.7
Manitoba	88.9	75.6	268.5
Saskatchewan	136.7	137.7	122.9
Alberta	169.3	181.5	8.8
British Columbia	103.7	100.8	142.9

Source: Globerman and Emes (2020), table 6.

Table 4: Index Values for Gross Fixed Capital Formation as a Share of GDP

	1990-2020	1990-2014	2015-2020
Canada	100.0	100.0	100.0
Newfoundland & Labrador	100.2	93.0	128.6
Prince Edward Island	85.4	85.6	85.0
Nova Scotia	91.7	90.9	94.5
New Brunswick	86.5	87.3	83.6
Quebec	91.6	91.9	90.6
Ontario	90.0	89.4	92.5
Manitoba	89.3	86.9	98.6
Saskatchewan	93.1	89.8	106.0
Alberta	128.4	131.7	115.0
British Columbia	108.5	107.6	112.0

Source: Authors' calculations from Statistics Canada (2021), Table 36-10-0222-01.

Table 5: Index Values for Residential Construction Gross Fixed Capital Formation as a Share of GDP

	1990-2020	1990-2014	2015-2020
Canada	100.0	100.0	100.0
Newfoundland & Labrador	67.6	71.4	53.3
Prince Edward Island	89.5	85.4	105.2
Nova Scotia	94.9	92.7	103.1
New Brunswick	76.5	76.1	78.0
Quebec	98.9	98.7	99.4
Ontario	105.7	105.2	107.8
Manitoba	79.5	78.2	84.7
Saskatchewan	55.1	55.0	55.8
Alberta	82.4	84.5	74.2
British Columbia	135.3	133.9	140.8

Source: Authors' calculations from Statistics Canada (2021), Table 36-10-0222-01.

4 are reasonably comparable to the data reported in table 1. Namely, the three Maritime provinces underperform the national performance as a whole, although the underperformance of Nova Scotia and New Brunswick is less marked in table 4 than in table 1, while Prince Edward Island's investment performance is actually somewhat worse when standardizing for GDP, as is also the case for Newfoundland & Labrador.

In a similar manner, table 5 reports index values for the ratio of gross fixed capital formation in residential construction to GDP for individual provinces, while table 6 reports index values for business gross fixed capital formation to GDP for individual provinces. There are notable distinctions when comparing the results of gross investment in residential construction and business gross investment. Namely, the performance of Newfoundland & Labrador is worse compared to the national average for investment in residential construction but better in the case of business gross investment. The opposite is the case for Prince Edward Island and Nova Scotia in the period from 2015 to 2020. Perhaps what is most noteworthy in table 6 is the below-average business investment performance of the three Maritime provinces over the full 1990 to 2020 period, as well as the two sub-periods. Business investment comprises investment in non-residential structures, machinery and equipment, and intellectual property products.

As mentioned earlier, the latter two asset categories are primary contributors to improved productivity and higher standards of living. Hence, table 7 reports index values for the ratio of gross fixed capital formation in machinery and equipment and intellectual property products as a share of GDP for the provinces and periods reported in tables 5 and 6. Perhaps what is most noteworthy in table 7 is the decline in the relative performance of Newfoundland & Labrador when it comes to investing in machinery and equipment and intellectual property products compared to its relative performance when it comes to investing in total gross business assets. The three Atlantic provinces suffered below-average relative investment performance in machinery and equipment and in intellectual property products.

In summary, the three Maritime provinces have been characterized by below-average performance in business-related fixed capital investments over the past three decades. While Newfoundland & Labrador performed better, it was primarily due to large investments in engineering-related infrastructure in oil and gas and utilities.¹¹ Indeed, Newfoundland

¹¹ A majority of these infrastructure investments now represent public- and not private-sector assets. Public additions to the stock of capital increased dramatically in electric power infrastructure (hydraulic production plants, power transmission networks, and power distribution networks) in Newfoundland & Labrador starting in 2014, while private additions remained largely flat. Public additions accounted for 66

Table 6: Index Values for Business Gross Fixed Capital Formation as a Share of GDP

	1990-2020	1990-2014	2015-2020
Canada	100.0	100.0	100.0
Newfoundland & Labrador	103.5	95.2	136.0
Prince Edward Island	74.3	72.8	80.1
Nova Scotia	82.6	82.4	83.4
New Brunswick	77.0	77.3	76.0
Quebec	87.8	88.3	85.7
Ontario	88.2	87.3	91.7
Manitoba	84.8	81.8	96.8
Saskatchewan	97.6	94.4	110.0
Alberta	138.0	142.4	120.7
British Columbia	110.5	109.1	115.7

Source: Authors' calculations from Statistics Canada (2021), Table 36-10-0222-01.

Table 7: Index Values for Machinery and Equipment and IPP as a Share of GDP

	1990-2020	1990-2014	2015-2020
Canada	100.0	100.0	100.0
Newfoundland & Labrador	76.4	72.7	92.2
Prince Edward Island	71.1	69.3	78.4
Nova Scotia	85.1	83.6	91.4
New Brunswick	86.2	83.6	97.1
Quebec	93.2	93.4	92.2
Ontario	97.3	95.9	102.9
Manitoba	86.7	84.0	98.1
Saskatchewan	96.3	91.2	118.0
Alberta	127.7	132.4	107.8
British Columbia	88.7	88.8	88.2

Source: Authors' calculations from Statistics Canada (2021), Table 36-10-0222-01.

& Labrador also exhibited investment performance in machinery and equipment and intellectual property products that was below average. These data support the importance of implementing policies that will improve the business investment climate in Atlantic Canada.

percent of total additions between 2014 and 2020 (see Statistics Canada, table 36-10-0608-01).

3. Human Capital Investment in Atlantic Canada

There are several definitions of human capital. One common definition identifies human capital as knowledge and skills obtained through educational activities such as compulsory education, post-secondary education, and vocational education. A somewhat broader definition identifies human capital as comprising an amalgam of factors such as education, experience, training, intelligence, energy, work habits, trustworthiness, and initiative that affect the value of a worker's productivity.¹²

It seems clear that human capital is difficult to measure accurately, even if one adopts a relatively narrow definition of the concept. For example, if one measures human capital strictly by formal educational attainment, one should also presumably capture the quality of the attained formal education, which is difficult to do. If one adopts a broader definition of human capital, one is challenged to measure intangible attributes such as intelligence and initiative. Hence, any comparison between the Atlantic provinces and the rest of Canada in human capital investments must be interpreted cautiously. Notwithstanding this caveat, there is suggestive evidence that there is a human capital investment gap between the Atlantic provinces and Canada as a whole.

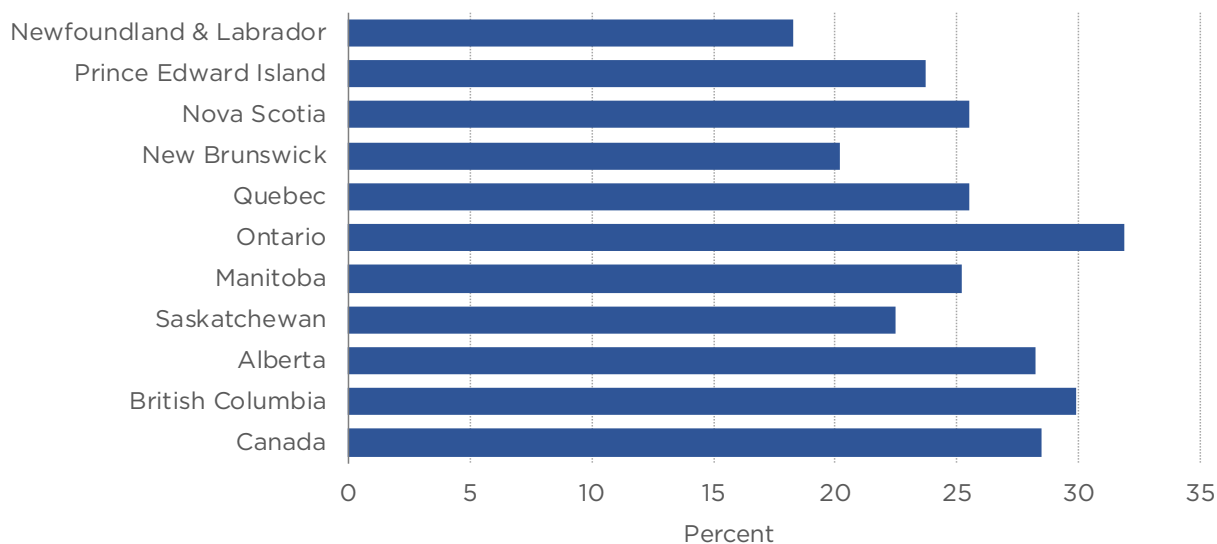
A broad measure of educational attainment that is available from census data is the percentage of the working age population that has completed a specific level of formal education.¹³ In this regard, figure 2 reports the percentage of the working age population that achieved a university certificate, diploma, or degree at the bachelor level or higher according to the 2016 Canadian census. It shows that each of the Atlantic provinces had a lower percentage of the working age population with this level of formal education that did the nation as a whole. Of the four Atlantic provinces, Newfoundland & Labrador and New Brunswick were substantially below the average.

The Conference Board of Canada (2014) reports an even broader measure of the education and skill levels of the workforces in individual

¹² See Kwon (2009) for these and other definitions of human capital.

¹³ The working age population is typically identified as individuals between the ages of 25 and 64.

Figure 2: Percent of Working Age Population with University Certificates, Diplomas, or Degree at Bachelor Level or Above



Source: Statistics Canada (2017).

Canadian provinces. It employs a total of 23 indicators to assess provincial performance in the category of education and skills.¹⁴ The league table the Conference Board created benchmarks the individual provinces and Canada as a whole against international peer countries based on standard of living, population size, and geographic size. Table 8 reports the letter grades for Canada and for each individual province. By way of reference, only two countries, Japan and Finland, earned a higher grade (A) than Canada at the national level. For the purposes of this essay, the grade scores given to individual provinces are of most interest. As table 8 shows, the four Atlantic provinces are graded below the national average, although Nova Scotia does receive a higher grade than Manitoba and Saskatchewan.

An examination of the economic performance of the New England states (O'Farrell, 1990/2013) and Massachusetts (Dorfman, 1983) clearly underlines the roles that human capital and university-led research can play. In the case of Massachusetts, enterprises founded after 1945 spearheaded economic growth in the state. Dorfman (1983) credits Massachusetts's distinguished universities as being major contributors to the state's

¹⁴ For a full discussion of the criteria the study used, see Conference Board of Canada (2014).

Table 8: Overall Rating of Education and Skills

	Rating
Canada	B
British Columbia	B
Ontario	B
Alberta	B
Quebec	C
Nova Scotia	C
Manitoba	D
Saskatchewan	D
New Brunswick	D
Newfoundland & Labrador	D
Prince Edward Island	D-

Source: The Conference Board of Canada (2014).

economic success. In particular, numerous start-up companies, particularly in the electronics sector, were spinoffs from university labs.

While all colleges and universities contribute in a general way to increasing the stock of human capital, research universities are uniquely important to promoting innovation (Andes 2017). In this regard, Atlantic Canada appears to be at a disadvantage compared to other Canadian provinces. For example, of the 16 members of the Association of Atlantic Universities, only 2 (Dalhousie and Memorial University of Newfoundland) ranked among the top 20 research universities of the 50 Canadian research universities rated by RESEARCH Infosource Inc (2021).¹⁵

In summary, the available data show that the Atlantic provinces underperform on investment in physical and human capital, which underlies the growth of productivity and higher living standards. The following section discusses policies that might improve the environment for investment in productivity-enhancing physical and human capital in the Atlantic provinces.

¹⁵ Dalhousie ranked 17th and Memorial 19th in the sample for 2021. There are, of course, many more colleges and universities in Atlantic Canada and in other provinces that were not identified as research universities. A relevant caveat here is that Atlantic Canada's share of the total Canadian population in 2020 was approximately 7 percent. A small population limits the number of research universities that can be financially supported by provincial funding.

4. Diagnosing and Improving the Investment Environment in Atlantic Canada

This study is hardly unique in identifying the unfavourable investment environment in the Atlantic provinces.¹⁶ Moreover, there are numerous studies that attempt to identify the specific factors contributing to the persistent poor relative economic performance of Atlantic Canada.¹⁷ Indeed, policymakers in Canada at both the federal and provincial levels seem well aware of the economic hardships that the residents of Atlantic Canada endure and have attempted to ameliorate those hardships through a variety of policies.¹⁸ In this regard, what is noteworthy is the continued reliance on government to improve the investment climate in Canada. Even the recommendations of business groups for improving the investment environment in Atlantic Canada call for substantial involvement by government in the effort.¹⁹ Yet if large direct and indirect roles for government were positive contributors to the environment for investment in physical and human capital in Atlantic Canada, that region would arguably be among the provinces with the highest standards of living given the already large role that governments play in that region's economy.

Whalen and Globerman (2020) report data underscoring the relatively large size of the public sector in Atlantic Canada. The broadest monetary measure they report is consolidated government spending which encompasses spending by all levels of government on goods and services, transfer payments, and interest on public debt.²⁰ Total government spending as a percentage of GDP for 2018 is reported in table 9 for each prov-

¹⁶ McMahan (2000a, 2000b) makes notable contributions to the discussion of this issue.

¹⁷ See, for example, McCahon (2021).

¹⁸ See, for example, Canada (undated) for a discussion of the government's Atlantic Growth Strategy launched in July 2016 by the government of Canada and the Atlantic provincial governments.

¹⁹ See, for example, Holden (2019) and Hyslop (2021, September 21).

²⁰ Hence, when discussing a specific province, their measure refers to spending in that province by all three levels of government.

Table 9: Total Consolidated Government Spending as a Percent of GDP, 2018

	Percent
Canada	40.3
Newfoundland & Labrador	46.1
Prince Edward Island	57.4
Nova Scotia	61.6
New Brunswick	56.6
Quebec	47.9
Ontario	38.9
Manitoba	47.4
Saskatchewan	37.4
Alberta	29.3
British Columbia	35.5

Source: Whalen and Globerman (2020), table 1.

ince and for Canada as a whole.²¹ The percentages for the three Maritime provinces are well above the national average and higher than for any other province. While the percentage for Newfoundland & Labrador is above the national average, it is below that for Quebec and Manitoba.

Government spending on goods and services makes up the largest share of government spending in the provinces. The second largest share is accounted for by transfer payments. In this regard, three of the Atlantic provinces (Newfoundland & Labrador, Prince Edward Island, and New Brunswick) exceed the national average (27.4 percent) for the share of total government expenditures going to transfer payments. Nova Scotia (at 27.3 percent) is essentially at the national average.²² In short, government spending as a share of provincial economic activity is relatively high in Atlantic Canada, particularly in the case of government transfer payments. Below we will discuss the implications of these transfer payments, primarily in the form of payments under equalization and for employment insurance.

Yet another measure of the relative size of government is public sector employment as a share of total employment. Table 10 reports public sector employment as a percentage of total employment calculated as a 5-year average from 2015-2019 for Canada as a whole and for individual

²¹ 2018 was the last year for which Whalen and Globerman report this data.

²² See Whalen and Globerman (2020).

Table 10: Public Sector Employment as a Percentage of Total Employment, 2015-2019

	Percent
Canada	20.2
Newfoundland & Labrador	27.5
Prince Edward Island	26.9
Nova Scotia	24.9
New Brunswick	24.6
Quebec	21.8
Ontario	18.7
Manitoba	25.3
Saskatchewan	24.7
Alberta	18.7
British Columbia	18.0

Source: Whalen and Globerman (2020), table 2.

provinces. The Atlantic provinces are well above the national average on this measure of relative government size, and by and large exceed other provinces in the measure.²³

Beyond spending, government's role in an economy can also be measured by regulation and taxes. Unfortunately, there is no comprehensive numerical measure of the magnitude of government regulation comparable to numerical estimates of government spending that exist at the provincial level. However, Stansel, Torra, and McMahon (2021) report a "league table" for Canadian provinces for an index of labour market freedom.²⁴ Newfoundland & Labrador and Prince Edward Island are the 7th and 8th ranked provinces in terms of labour market freedom, where higher numbers indicate more regulation. Conversely, New Brunswick and Nova Scotia are ranked 3rd and 4th indicating less regulation than most other provinces.

In terms of taxation at the corporate level, Bazel and Mintz (2021) report estimates of the marginal effective corporate tax rate (METR) for provinces in 2020. The METR is estimated as the expected pre-tax return minus the expected after-tax rate of return on a new (marginal) investment divided by the pre-tax rate of return. It accounts for investment

²³ Manitoba exceeds Nova Scotia and New Brunswick in public sector employment as a share of total employment.

²⁴ Stansel, Torra, and McMahon (2021) provide details regarding the construction of the index.

Table 11: Federal-Provincial Marginal Effective Tax Rate (METR) 2020

	Percentage
Canada	15.6
Newfoundland & Labrador	8.0
Prince Edward Island	11.3
Nova Scotia	12.3
New Brunswick	10.7
Quebec	11.5
Ontario	15.1
Manitoba	21.0
Saskatchewan	20.6
Alberta	12.1
British Columbia	25.6

Source: Bazel and Mintz (2021).

tax credits, the statutory tax rate, accelerated depreciation allowances, and historical cost depreciation adjusted for inflation. As shown by the estimates reported in table 11, the METRs for the Atlantic provinces are relatively low.

In isolation, these METR estimates suggest that relatively high corporate tax rates are not an important contributor to relatively low rates of business investment in Atlantic Canada compared to other provinces. However, as Bazel and Mintz (2021) note, the relatively low METRs in the Atlantic provinces are largely driven by the federal government's Atlantic Investment Tax Credit (AITC) program. The AITC is a federal tax credit equal to 10 percent of the capital cost of "qualified property" that is acquired primarily for use in the Atlantic provinces.²⁵ Qualified property includes certain prescribed buildings, machinery or equipment, or energy generation and conservation property that has not been previously used for any purpose and that is to be used by the taxpayer in Canada primarily in the following activities: manufacturing or processing goods for sale or lease; farming or fishing; logging; storing grain; or harvesting peat.²⁶

This brief description of the AITC highlights its shortcomings as a robust instrument to promote business investment in Atlantic Canada.

²⁵ Individual Atlantic provinces also have their own equity tax credit programs aimed at encouraging local investment in a local business. See Hyslop (2021, September 21).

²⁶ For a full description of the AITC and a discussion of its ambiguity when it applies to renewable energy, see Savonarota (2021, March 22).

In particular, it is geared towards investments in specific resource and primary manufacturing industries, which seems anachronistic for modern economies whose economic growth depends increasingly on information technology and other technology-intensive services.²⁷ As well, requiring the physical investments to be located in the Atlantic provinces discourages business expansions outside of the Atlantic region but which would likely create head office jobs and related managerial positions in that region.²⁸ Finally, since government approval is required for specific investments to qualify for the tax credit, the expected after-tax returns on prospective investments are influenced by bureaucratic decisions, which creates uncertainty surrounding investment decision-making. For these reasons, the effectiveness of the AITC as an instrument to promote net capital investment is certainly questionable.²⁹

Personal income tax rates

Differences across jurisdictions in personal income tax rates influence the geographical location decisions of relatively mobile workers. The latter tend to be workers with relatively high levels of human capital. Hence, personal income tax rates are an important feature of any jurisdiction's investment environment. In the Atlantic provinces, what is most relevant are differences between their provincial personal income tax rates and those for other provinces since interprovincial migration is a more likely outcome of personal income tax rate differences than is migration out of Canada entirely.

It is difficult to compare the tax rate structures of provinces given that differences in marginal tax rates kick in at different income levels. However, since attracting and retaining highly educated and skilled individuals is arguably of most concern to improving a jurisdiction's investment environment, and since those individuals are likely to earn relatively

²⁷ It might be noted that the Maritime provincial governments have not been welcoming to resource-based investments, either. For example, Emery (2020) references some \$40 billion in mostly resource-based investment proposals that the government of New Brunswick has discouraged since 2006.

²⁸ Globerman (2012) discusses case studies that show that home country policies that directly or indirectly discourage investment outside the home country also discourage investment in the home country. In particular, they discourage the growth of corporate head offices in the home country. There is no reason to believe the relationship would be different at the sub-national level.

²⁹ It is also possible that companies receiving tax credits simply reduce their private spending equivalently.

Table 12: Provincial Personal Income Tax Top Rate

	Top Rate (Percent)	Amount Over (\$)
Newfoundland & Labrador	18.3	190,363
Prince Edward Island	16.7	63,969
Nova Scotia	21.0	150,000
New Brunswick	20.3	162,383
Quebec	25.75	109,755
Ontario	13.16	220,000
Manitoba	17.4	72,885
Saskatchewan	14.5	130,506
Alberta	15.0	314,928
British Columbia	20.5	222,420
Average	18.3	163,720

Source: Canada (2022) and authors' calculations.

high incomes, it seems relevant to compare provincial income tax rates at their highest marginal tax levels. Therefore, table 12 reports the highest marginal tax rate for each province along with the income level at which the highest rate is applied. The reported data show that the top marginal personal income tax rates in Nova Scotia and New Brunswick are above the average top marginal tax rate for Canada as a whole, while the rate for Newfoundland & Labrador is essentially equal to the average top marginal rate. Only Prince Edward Island has a below-average top marginal income tax rate, but that rate kicks in at an income level that is well below the average level for the country as a whole. Nova Scotia and New Brunswick also have their highest marginal income tax rate kick in at income levels below the average at which the top marginal rate kicks in for Canada as a whole. In short, the personal income tax structure in the Maritime provinces is especially unfavourable to the accumulation and retention of highly educated and skilled professionals and entrepreneurs.³⁰

³⁰ Garlick, Davies, Polèse, and Kitigawa (undated), among others, note that all four Atlantic provinces have difficulty retaining college and university graduates and register the net outmigration of university graduates.

The role of government

There is no denying that the Atlantic provinces face specific challenges to attracting investment in physical and human capital. Relatively low population levels in the urban areas of the Atlantic region mean that it is more difficult for those urban areas to benefit from agglomeration economies which, in turn, attract investment.³¹ As well, greater physical distance from major markets in Canada and the United States increase transportation and communication costs for companies located in the region. The dearth of technology-intensive companies encourages outmigration of young, educated people to urban centres in Canada and the US that host companies offering attractive career opportunities.

Without gainsaying the relevance of these features of Atlantic Canada, it has been argued that the relatively large role of government in Atlantic Canada has actually worsened that region's investment environment. McMahon (2021) states quite bluntly and succinctly that in Atlantic Canada, the key problem is oversized government.

To staff its activities, large government competes directly with the private sector for productive resources such as educated workers, thereby raising required compensation rates for private sector organizations, which discourages private investment, other things constant. More important, perhaps, are the generous unemployment benefits that seasonally employed workers receive, which is of particular benefit to workers in the fishing and vertically linked service industries in Atlantic Canada. The current Employment Insurance system in Canada therefore indirectly obliges private sector employers interested in hiring full-time employees to compete for workers against the national Employment Insurance program, since seasonal workers can essentially count on the government to subsidize relatively long periods of "voluntary" unemployment. This indirect competition is likely to be a particular burden for small but successful companies that need to hire workers in order to grow their businesses. At the same time, since the Employment Insurance program is not a risk-rated system, employers have less incentive to invest in new businesses or related activities that are less subject to seasonal influences, while individuals who want to live and work in Atlantic Canada have weaker incentives

³¹ Agglomeration economies are efficiency advantages that are associated with growth in the size of a region. These economies arise from a variety of sources including greater specialization of labour and technology spillovers across organizations. The difficulty of attracting investment into less densely populated regions will be discussed in more detail later in this section.

to invest their time and energy in retraining for different and more productive occupations than the seasonal jobs they currently hold.³²

Equalization payments

Equalization payments are monetary transfers from the federal government to provincial governments to ensure that provincial governments have sufficient revenues to provide reasonably comparable levels of public services at reasonably comparable levels of taxation. Eligibility for payment is determined on a per capita basis by how a province's fiscal capacity, i.e., its ability to raise revenues, compares to the fiscal capacity of other provinces. McMahon (2021) reports that equalization payments to Atlantic Canada were \$1,708 per person in 2019, which was about one quarter of the net fiscal per-capita transfers to the region in that year.³³ He also discusses how through the 1960s when fiscal transfers were relatively small by today's standards, Atlantic Canada was catching up economically with the rest of Canada. Specifically, economic growth was faster, unemployment (except in Newfoundland & Labrador) was roughly at the Canadian average, and private sector investment on a per-capita basis had risen to about the Canadian average. This progress was arrested and even reversed as Ottawa opened the "fiscal floodgates," including changes that increased Employment Insurance payments to the region.

Other researchers have identified the malign effects of large federal government fiscal transfers on Atlantic Canada's economy including on investment incentives. For example, Dahlby (2002) argues that fiscal equalization grants tend to encourage purely consumptive public sector expenditures and discourage tax-base-enhancing expenditures such as on education and infrastructure, which, in turn, discourages private sector investment. More broadly, the equalization program indirectly penalizes provinces that try to grow their economies through better economic policies (MacKinnon, 2011).

Ironically but unsurprisingly, even government subsidy programs designed specifically to promote business investment and innovation in Atlantic Canada have not been successful. Brown (undated) reviews a series of federal government regional development programs focused on Atlantic Canada and notes that the most consistent policy instrument has

³² A risk-rated insurance system would charge larger premiums to employers and employees that drew historically larger benefits. For a discussion of Canada's Employment Insurance system and how it influences economic activity in the Atlantic region, see Globerman and Fuss (2021).

³³ These are both expressed in 2018 constant dollars.

been industrial incentives. He concludes that, on balance, these policies have been ineffective. O'Farrell and Hitchins (1990) conclude that the relatively large amount of money made available to businesses in Atlantic Canada through government subsidies and contracts have made the business sector less competitive and more politicized and has led many businesses to switch their focus from creating products for the marketplace to landing government subsidies and contracts.

The Atlantic Growth Strategy

Against this background, it is difficult to be optimistic about the Atlantic Growth Strategy (AGS) touted by the federal government. The AGS was launched in July 2016 by the government of Canada and the governments of the four Atlantic provinces.³⁴ The federal government promotes the AGS as a strategy to drive sustainable growth through strategic initiatives and investments in five key areas: to attract and retain skilled workers and immigrants; to foster greater business innovation; to respond to climate change and advance clean growth in Atlantic Canada; to create long-term growth and high quality jobs through trade, investment and tourism; and to support growth and engage and connect people through infrastructure. While each initiative might sound good in isolation, the key point is that as a group the initiatives represent a “top-down” sourcing and distribution of funding. For example, governments will provide financing, advisory, and innovation services to Atlantic companies with high growth potential. They will also provide venture capital financing. One might argue that capital markets are more likely to identify Atlantic companies with high growth potential than are government bureaucrats. The governments will invest in an Atlantic Canada Low Carbon Economy Leadership Fund to build EV charging infrastructure and to advance electricity infrastructure initiatives to reduce greenhouse gas emissions in Atlantic Canada. One might object that whatever the benefits of reducing greenhouse gas emissions, it is unclear that the initiative will foster greater business innovation and support economic growth.

The challenges to promoting investment

Advocates of reducing the size of government in Atlantic Canada through lowering taxes, reducing government spending, and cutting regulatory red tape acknowledge that any major efforts in this direction will require

³⁴ See Canada (2018) for a full discussion of the program.

“transition policies” and will also face political opposition from vested interests who have long benefited from the Atlantic region’s “welfare state” economy. We do not gainsay these caveats. Economic reforms that would meaningfully improve the private sector investment environment in Atlantic Canada will be difficult to implement as a practical matter, although certainly not unrealistic.

Ireland’s experience is informative in this regard. While there is debate about the precise combination of policies that promoted the “Irish miracle,” it is generally accepted that significant reductions in Ireland’s corporate and personal tax rates attracted substantial investments into the country, especially investments by foreign-owned companies. An increase in the labour force participation rate combined with public investments in the country’s secondary education system increased the supply of skilled labour, which was an additional attraction for investment.³⁵ Interestingly, the overall impact of “structural” EU transfers to Ireland in terms of their contribution to income growth was very low, although some uses to which transfer payments were put in Ireland, particularly in the educational sectors, dovetailed with that country’s growth initiatives (Burnham, 2003). Substantial cuts in planned government spending and the abolition of specific government agencies were also important features of the reform initiatives that preceded the extraordinary expansion of the Irish economy during the 1990s and beyond.

To be sure, there are obvious institutional and other differences between Ireland and the Atlantic provinces that are potential cautions against assuming that the policies underlying the transformation of Ireland’s economy would work equally as well in Atlantic Canada. In particular, while both Ireland and the Atlantic provinces are effectively small open economies, Ireland is geographically proximate to a large market in Europe, including England. The geographical proximity is undoubtedly an advantage for Irish exporters and a location’s export potential is an attraction for investors. In this regard, it might be argued that the Atlantic provinces face a “chicken-and-egg” problem. Specifically, physical and human capital investments are necessary to facilitate an efficient export sector at the same time as the potential to export promotes physical capital investments and attracts human capital to a region.

It is beyond the scope of this study to discuss potential export promotion strategies for the Atlantic provinces. However, several points might be made in this regard. First, as noted earlier, the apparent political preference to discourage resource-based manufacturing in the region mitigates relying on resource extraction and primary manufacturing as a basis

³⁵ For a discussion of the major policy initiatives that the Irish government undertook, see Burnham (2003) and Sigfrid (2004, April 1), among others.

for expanding exports. This effectively means that developing an export-based economic growth strategy needs to build upon service industries. Obviously, some service industries such as restaurants are “place-based” and are intrinsically non-tradeable sectors. However, other service industries such as finance, software development, and consulting are tradeable sectors, especially given the potential to deliver many such services using the Internet.³⁶

A second point relates to the small population base of the Atlantic region which, as noted earlier, mitigates the benefits of agglomeration economies. To the extent that tradeable service sectors benefit from agglomeration economies, the Atlantic provinces suffer from a potentially intractable first-mover disadvantage. Put differently, small and medium-sized service sector firms in those provinces simply may be unable to compete with similar firms located in densely populated metropolitan areas in Canada and the United States which would be the primary markets, at least initially, for service exports from the Atlantic region.

Floerkemeier, Spatafora, and Venables (2021) assert that agglomeration economies and, consequently, first-mover advantages, are strong for a number of tradeable service industries such as finance, technology, and entertainment. At the same time, however, they acknowledge that rapidly declining communication costs and the emergence of the digital economy are potentially weakening agglomeration economies by effectively reducing the relevance of physical distance as a barrier to transacting. Furthermore, the emergence of more specialized value chains, whereby the value-added for specific services is carried out by specialized firms embedded in the vertical production chain, is dispersing production activity geographically and helping to make “lagging” regions more attractive destinations for inward investment. Similarly, Lopes, Gomes, Oliveira, and Oliveira (2022) discuss case studies of small and medium-sized firms located in peripheral areas that successfully integrated into technology networks located in urban centres both to benefit from innovative work being carried out in those networks and to provide input services for the innovation work being done. This export growth, in turn, positively influenced the economic growth in the regions where the exporting firms operated. Their case studies also highlight the importance of a commitment on the part of the firms studied to operate what they call an open innovation strategy.

In short, firms located in small open economies face challenges when competing in export markets against firms located in metropolitan centers, particularly when the economic activities in question are char-

³⁶ Meltzer (2015) provides a discussion of how small and medium-sized companies have built export-based service-sector strategies around robust Internet platforms.

Table 13: GDP per Person (Index Values)

	1981	1991	2001	2011	2020
Canada	100	100	100	100	100
Newfoundland & Labrador	76.5	87.6	96.4	122.1	118.0
Prince Edward Island	60.8	67.2	69.2	73.4	76.1
Nova Scotia	68.7	76.2	74.5	77.6	78.8
New Brunswick	68.1	75.8	77.7	81.3	79.6

Sources: Authors' calculations from Statistics Canada (2022c), Table 17-10-0005-01; and (2022d), Table 36-10-0222-01.

acterized by agglomeration economies. However, the challenges are not insurmountable if the appropriate incentives exist to surmount them. In this regard, the substantial transfer payments to the Atlantic region and the entrenchment of a relatively large and well-paying public sector reduce incentives to transform the Atlantic provinces, particularly the Maritime provinces, from a non-tradeable public-sector service-oriented economy to a tradeable commercial service-oriented economy.

The Atlantic provinces enjoy the practical advantage of being integrated into a national market for financial capital, as well as for highly educated workers. Relatively affordable housing compared to major metropolitan areas in other parts of Canada is also a locational advantage. As such, the persistently low ratios of GDP per person in the Maritime provinces relative to the country as a whole, as reported in table 13, raise concerns about the degree to which the Maritime provinces can use the advantages of effectively being a small, open economy in a larger economic union. Specifically, table 13 shows that over the approximately 40-year period from 1981 to 2020, GDP per capita for the Maritime provinces was 20 percent to 30 percent below the national average. Still, the three Maritime provinces show some catch-up over that period, as would be expected for lower-income regions that are economically integrated into a larger and wealthier economic unit. In the case of Newfoundland & Labrador, per capita GDP exceeded the national average over the past two decades, although the abundant energy and mineral resources of that province differentiate it from other Atlantic provinces.

Increased investment resulting in faster economic growth and an expanded tax base in Atlantic Canada will also presumably result in reduced transfer payments to the region and possibly a restructuring of the Employment Insurance program to make that program less favourable for

the Maritime provinces in particular. In this context, cooperation among provincial governments and with the federal government is likely needed to ensure that strong incentives exist for the governments of the Atlantic provinces to grow their tax base through economic reforms.

Against this background, the major elements of the Irish government's growth initiatives, primarily reducing the government's relative size in the economy and providing incentives for investment through broad-based tax reductions, deregulation, investments in transportation and communication infrastructure, and enhanced education and training opportunities are policy instruments that can and should arguably be implemented by provincial governments in Atlantic Canada to facilitate an improved investment environment.³⁷

³⁷ There are obvious opportunities for the individual Atlantic provinces to enhance their attractiveness to investors by harmonizing tax and regulatory legislation, encouraging specialized centres of excellence in the region's universities, removing certification barriers to professional and service workers and the like.

Concluding Comments

For decades, the Atlantic provinces have suffered sub-par economic growth, which is undoubtedly related to a relatively poor environment for private sector investment in those provinces.³⁸ Improving the investment environment in Atlantic Canada is therefore imperative to that region enjoying anything approximating the Irish miracle.

While no set of public policy prescriptions is necessarily suitable for all institutional settings, there are striking similarities between the current investment environment in Atlantic Canada and the environment in Ireland prior to its economic takeoff. In particular, prior to its period of relatively rapid and sustained economic growth, government was a large presence in the Irish economy, as it continues to be in Atlantic Canada. As well, Ireland received from other European countries the equivalent of the equalization payments that the Atlantic provinces receive from the Western Canadian provinces. Policymakers in Ireland saw a reduction in the size and scope of government as a prerequisite to any substantial improvement in the environment for private sector expansion, and prominent experts argue that the same is true for Atlantic Canada.

Ireland's experience also suggests that reducing personal income tax rates will attract human capital that is complementary to investments in machinery and equipment and intellectual property products. In this regard, governments can play a role in promoting the improved educational performances of the region's colleges and universities and can facilitate private sector infrastructure investments by reducing regulatory red tape and creating a "common market" within which labour and capital can move relatively freely across provincial boundaries while receiving what is essentially "national treatment."³⁹

³⁸ As noted earlier, the energy sector in Newfoundland & Labrador is a possible exception to this claim, although a major portion of the relevant investments were publicly funded or subsidized.

³⁹ In this context, national treatment means, among other things, that companies headquartered in one Atlantic province and doing business in another Atlantic province would be treated as though it were headquartered in the latter province. Similarly, professional and technical workers licensed in one province would have their licenses automatically recognized in the other Atlantic provinces.

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