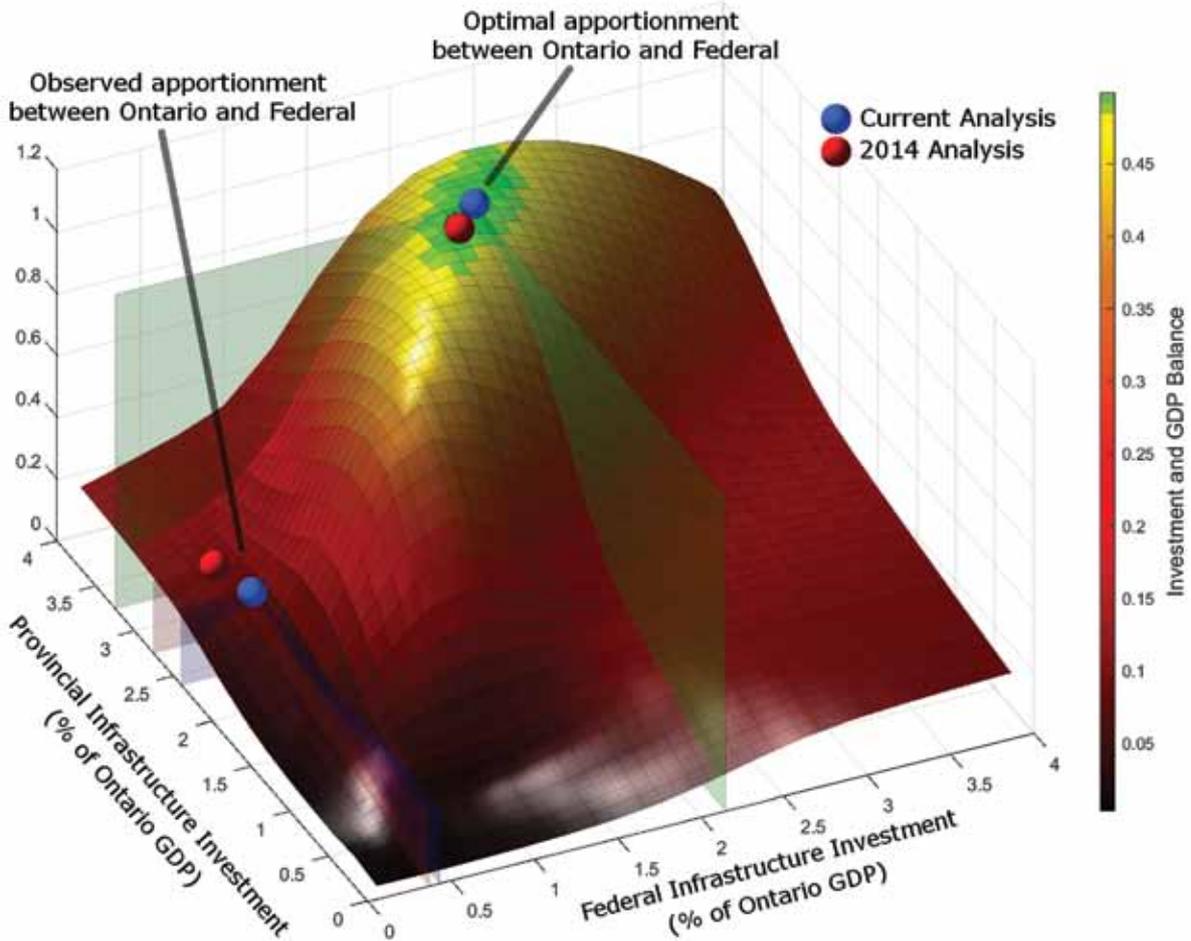


An Independent Study
Commissioned by



RESIDENTIAL AND
CIVIL
CONSTRUCTION
ALLIANCE OF
ONTARIO

Constructing Ontario's Future



Infrastructure Update 2018: Ontario Infrastructure Investment – Federal and Provincial Risks & Rewards

Infrastructure Update 2018:

Ontario Infrastructure Investment – Federal and Provincial Risks & Rewards

An independent research study prepared
for the Residential and Civil Construction
Alliance of Ontario (RCCAO)

BY:



AUGUST 2018



RESIDENTIAL AND
CIVIL
CONSTRUCTION
ALLIANCE OF
ONTARIO

Constructing Ontario's Future

RCCAO

25 North Rivermede Road, Unit 13, Vaughan, Ontario L4K 5V4

Andy Manahan, executive director

e manahan@rccao.com p 905-760-7777 w rccao.com

The Residential and Civil Construction Alliance of Ontario (RCCAO) is composed of management and labour groups that represent a wide spectrum of the Ontario construction industry.

The RCCAO's goal is to work in cooperation with governments and related stakeholders to offer realistic solutions to a variety of challenges facing the construction industry and which also have wider societal benefits.

RCCAO has independently commissioned 47 reports on planning, procuring, financing and building infrastructure, and we have submitted position papers to politicians and staff to help influence government decisions.

For more information on the RCCAO or to view copies of other studies and submissions, please visit rccao.com

RCCAO members include:

- Carpenters' Union
- Greater Toronto Sewer and Watermain Contractors Association
- Heavy Construction Association of Toronto
- International Union of Operating Engineers, Local 793
- International Union of Painters and Allied Trades, District Council 46
- Joint Residential Construction Association
- LiUNA Local 183
- Ontario Formwork Association
- Toronto and Area Road Builders Association

ABOUT THE CANADIAN CENTRE FOR ECONOMIC ANALYSIS

The Canadian Centre for Economic Analysis (CANCEA) is a socio-economic research and data firm. CANCEA provides objective, independent and evidence-based analysis and is dedicated to a comprehensive, collaborative, and quantitative understanding of the short- and long-term risks and returns behind market changes, policy decisions and economic behaviour.

CANCEA uses modern techniques in data science, including agent-based modelling, for econo-metric analysis, risk management assessments, demographic forecasts and epidemiology. CANCEA's work includes market analysis, policy evaluation and risk management, business model optimization, cost effectiveness and rate-of-return analysis, macroeconomic analysis, insurance risk evaluation, land use and infrastructure planning, logistics, and labour market analysis. CANCEA also provides comprehensive Canadian data services.

At the centre of CANCEA's analytical capabilities is an agent-based platform called Prosperity at Risk[®] that is an extensive, data-driven model of 56,000 geographic locations across Canada. Given the systems focus behind all of CANCEA's work, CANCEA has a one-model approach to its analysis which allows various disciplines and stakeholders to be incorporated into a single analysis.

ABOUT THIS REPORT

The design and method of research, as well as the content of this study, were determined solely by CANCEA.

Statistics Canada data and relevant literature were used to inform the computer simulation models used to produce the results of this report.

Forecasts and research often involve numerous assumptions and data sources, and are subject to inherent risks and uncertainties. This information is not intended as specific investment, accounting, legal, or tax advice.

TABLE OF CONTENTS

EXECUTIVE SUMMARY	8
OVERVIEW	8
RESULTS AT A GLANCE	8
CONCLUSIONS.....	9
1.0 INTRODUCTION	10
2.0 RECENT TRENDS	11
2.1 OVERVIEW OF PLANNED INFRASTRUCTURE INVESTMENT	11
2.2 ONTARIO INFRASTRUCTURE INVESTMENT.....	12
2.3 INCONSISTENCY IN DISBURSEMENT	14
3.0 UPDATED RESULTS: 2018 INFRASTRUCTURE INVESTMENT	16
3.1 OPTIMAL INFRASTRUCTURE INVESTMENT IN ONTARIO.....	16
3.2 FEDERAL AND PROVINCIAL RISKS AND REWARDS	17
4.0 CONCLUDING REMARKS	19
BIBLIOGRAPHY	20
ENDNOTES	22

LIST OF FIGURES

FIGURE 1: ONTARIO INFRASTRUCTURE INVESTMENT AS A PERCENTAGE OF GDP (TOP) AND MAINTENANCE AS A PERCENTAGE OF TOTAL INVESTMENT (BOTTOM)	13
FIGURE 2: ESTIMATED INFRASTRUCTURE INVESTMENT IN 2016 AND 2018 (FEDERAL)	15
FIGURE 3: GROWTH IN ONTARIO'S REAL GDP (2018-2068)	16
FIGURE 4: FEDERAL AND ONTARIO INVESTMENT BALANCE FOR MAXIMUM GDP GROWTH	18

LIST OF TABLES

TABLE 1: GOVERNMENT OF CANADA INFRASTRUCTURE INVESTMENT AND ONTARIO MATCH	11
TABLE 2: ONTARIO'S TRANSIT ALLOCATION BY SELECT COMMUNITIES	12

EXECUTIVE SUMMARY



OVERVIEW

In 2011, RCCAO released “Public Infrastructure Investment in Ontario: The Importance of Staying the Course” (RiskAnalytica, 2011). From a macroeconomic perspective, the report concluded that over the course of 50 years, maximum GDP growth could be achieved if an average of 5.1% of GDP were invested in required infrastructure and 22% of the total infrastructure investment were to be spent on maintenance. The report also assessed Ontario’s just released 10-year “Building Together” infrastructure plan (Ontario Ministry of Infrastructure, 2011) and found that the investment trend would move from 3.0% to 3.5% GDP based on the commitments in this plan.

Over the past seven years, infrastructure investment has been a common topic of discussion and a key electoral issue, with all levels of governments promising to invest more in infrastructure (Infrastructure Canada, 2018; Ontario Ministry of Infrastructure, 2018). Given all the promises and the crucial nature of timely public infrastructure investment to the prosperity of a region, an updated analysis was commissioned by RCCAO to determine what progress has, or has not, been made towards infrastructure investment which would maximize Ontario’s prosperity.

RESULTS AT A GLANCE

The updated analysis shows several important elements that should be considered when addressing infrastructure investments in Ontario:

- Since 2011, infrastructure investment in Ontario (as a percentage of GDP) has fallen or remained flat. In fact, it was below 3.0% for the 2015 – 2017 period, falling below 2.5% in 2016. **It remains considerably below the target of 5.1% of GDP identified in the 2011 report.**
- The lower levels of infrastructure investment are making it harder to achieve greater GDP growth in the long-term.

-
- To achieve maximum growth over the next 50 years, **the average level of infrastructure investment will now have to increase to 5.4% of GDP.**
 - Maintenance, as a percentage of total investment, has remained relatively constant, averaging 19% of total infrastructure investment since 2011.

The updated analysis also continues to demonstrate the imbalance in public infrastructure investment levels by tier of government, with **the federal government continuing to receive a greater share of the benefits from infrastructure investment compared to what they contribute.**

If the different levels of government were to invest in infrastructure in the same proportion as the benefits (such as tax revenue) that is received, the province and municipalities would collectively be expected to fund about 3.25% of GDP for the total infrastructure investment, while the federal government would fund the remaining 2.15%. The current breakdown of investment by government tier reveals a stark imbalance: Queen's Park and all Ontario municipalities contribute 2.4% of the investment with Ottawa providing 0.4% in 2017.

CONCLUSIONS

- 1 **Predictable, long-term infrastructure investments in Ontario are required for the province to reach its full economic potential.**

The lower levels of infrastructure investment have made it more difficult for Ontario to reach its full economic potential. The underinvestment over the last several years means that greater investment will be necessary in the future to support a growing population and economy. An average of 5.4% of GDP is now needed as an annual investment to achieve maximum real GDP growth over the next 50 years. This is an increase from 5.1% recommended in RiskAnalytica's 2011 report.

The larger infrastructure investment needed to maximize GDP highlights how today's delays make it harder to reach maximum economic growth in the future. To avoid this and ensure that Ontario remains competitive, efforts should be made to provide predictable, long-term infrastructure investments as well as comprehensive tracking mechanisms to ensure that projects are getting off the ground as planned.

- 2 **Long-term sustainability of infrastructure investment requires a more balanced approach between the federal, provincial and municipal governments.**

Currently, there is an imbalance in investment and rewards between the federal government and other levels of governments in Ontario which is unsustainable. **The federal government contributes too little relative to the rewards** (taxation revenue in particular) that are generated from infrastructure investment in Ontario.¹ This leaves the province in a risky predicament: increasing infrastructure investment (via debt financing) could result in long-term structural deficits, but rolling back infrastructure investment would result in greater economic setbacks.

1.0 INTRODUCTION

Public infrastructure plays a critical role supporting the economic and demographic growth of a region. Investment in infrastructure assets such as roads, water and wastewater, and transit is required to meet the needs of a growing population. In addition, public infrastructure is crucial to attract and retain industry and employment by providing the means to produce and deliver Ontario's goods and services.

Earlier analyses of infrastructure policy in Ontario (RiskAnalytica, 2011; CANCEA, 2014) indicated that a total of 5.1% of Ontario's GDP should be invested annually (across all levels of governments) to maximize the Province's long-term economic growth over the next 50 years. The target of 5.1% of GDP was based on the demographic and economic conditions in 2011 and assumed that infrastructure investment would increase from levels in 2011 towards the optimal levels of investment over the following several years. It is critical to invest in infrastructure that will provide long-term productivity benefits rather than focusing on short-term stimulus (CANCEA, 2015). An analysis of the risks and rewards that accrue to various tiers of government from infrastructure investment (CANCEA, 2014) highlighted an imbalance in which the federal government received a disproportionate portion of the benefits of public capital relative to its level of investment.

Evaluating the impact of infrastructure investment is an ongoing endeavour in which the outcomes depend on current as well as future changes in the economy, technology and demography of a region. Since the release of "Public Infrastructure Investment in Ontario: The Importance of Staying the Course" in 2011 and the "Ontario Infrastructure Investment: Federal and Provincial Risks & Rewards" in 2014, infrastructure investment has been a common topic of discussion and frequent election issue with various levels of governments promising to invest more in infrastructure (Infrastructure Canada, 2018; Ontario Ministry of Infrastructure, 2018).

Given the crucial nature of timely public infrastructure investment to the prosperity of a region, it is appropriate to update the analyses using the same model, but with current data, to see what progress has, or has not, been made towards maximizing the prosperity of Ontario. The aim of this update is to examine how the conclusions of the previous analyses may have shifted given recent infrastructure investment in Ontario by all levels of government.

The analysis was completed using CANCEA's *Prosperity at Risk*[®] platform, an agent-based "big data" computer simulation and analysis platform. It is an extensive, data-driven geospatial model that incorporates and combines social, health, economic, financial and infrastructure factors into a single system to serve Canadian policy and business interests. For more information on the *Prosperity at Risk*[®] platform, its applications and data sources for this analysis, please refer to "Public Infrastructure Investment in Ontario: The Importance of Staying the Course" (RiskAnalytica, 2011) and "Ontario Infrastructure Investment: Federal and Provincial Risks & Rewards" (CANCEA, 2014).

2.0 RECENT TRENDS

2.1 OVERVIEW OF PLANNED INFRASTRUCTURE INVESTMENT

In recent years, the governments of Canada and Ontario have announced renewed efforts for investing in long-term infrastructure with the goal of supporting economic growth, sustaining jobs, developing and expanding communities, and advancing the “green economy” in the province.

Although there are different apportionments of infrastructure investment between the two governments, current and future investments in long-term infrastructure are focused on five main areas: public transit, green infrastructure, social infrastructure, infrastructure within rural and northern communities, and trade and transportation infrastructure (Infrastructure Canada, 2018; Ontario Ministry of Infrastructure, 2018).

The contributions from the federal government towards infrastructure investment involve a 12-year plan that started in 2016, which contains an investment of \$180 billion over that time period. Funding allocated prior to 2016 includes a total of \$92 billion broken down between legacy infrastructure² (\$58 billion) and social and green infrastructure³ (\$34 billion). New infrastructure investments outlined as part of the Investment in Canada Plan (IICP) amounts to \$95.6 billion and are heavily weighted towards public transit (\$28.6 billion), green infrastructure (\$26.9 billion) and social infrastructure (\$25.3 billion). These three major components account for 85% of the new infrastructure amounts.

As part of this overall infrastructure investment plan for Ontario, the federal and provincial governments signed a bilateral agreement that would see \$11.8 billion (to be matched in part by Ontario) of this funding distributed for infrastructure projects in Ontario between 2018 and 2028. Table 1 below provides a breakdown of the budgeted contribution by the federal government and the provincial match.

Table 1: Government of Canada infrastructure investment and Ontario match

INFRASTRUCTURE TYPE	FEDERAL CONTRIBUTION	ONTARIO CONTRIBUTION	TOTAL
Public Transit	\$8.3 billion	\$7.3 billion	\$15.6 billion
Green Infrastructure	\$2.8 billion	\$2.4 billion	\$5.2 billion
Community, Culture, and Recreation	\$407 million	\$336 million	\$743 million
Rural and Northern Communities	\$250 million	\$206 million	\$456 million
Total	\$11.8 billion	\$10.2 billion	\$22 billion

Source: Ontario Ministry of Infrastructure, 2018

Of note is the large proportion dedicated to public transit, which represents 70% of the total federal contribution and 72% of the provincial match. Table 2 on the next page highlights how the transit allocation is planned to be distributed among select communities.

Table 2: Ontario's Transit Allocation by Select Communities

RECIPIENT	MAXIMUM TRANSIT ALLOCATION	PROVINCIAL COST MATCH ⁴
Brampton	\$191 million	\$158 million
Metrolinx	\$593 million	\$890 million
Mississauga	\$339 million	\$280 million
Peel	\$5.6 million	\$4.6 million
Toronto	\$4.9 billion	\$4.0 billion
York Region	\$204 million	\$168 million

Source: Ontario Ministry of Infrastructure, 2018

In addition, based on Ontario budgets, provincial investment in infrastructure is projected to increase substantially over the next decade. Since 2014, the budgeted infrastructure investment plan has increased from \$130 billion over 10 years (2014-2024) in 2014 to \$190 billion over 13 years⁵ (2014-2027) in the 2017 budget⁶ (Ontario, 2014; Ontario, 2017a).

Similar to the federal infrastructure investment plan, a large portion of the provincial infrastructure investment plan is focused on transit and transportation. In 2014, approximately \$29 billion, or 22%, of the plan was allocated to investments in public transit, transportation, and other priority infrastructure projects (Ontario, 2014). This was subsequently increased to \$31.5 billion in the 2015 Budget, with \$16 billion allocated to projects within the Greater Toronto and Hamilton Area (GTHA) and \$15 billion allocated to projects outside of the GTHA (Ontario, 2015). More recently, within the 2017 Long-Term Infrastructure Plan, which set out a \$190 billion investment in infrastructure over 13 years starting in 2014-15, 35% was associated with transit and 19% was associated with highways and other transportation⁷ infrastructure (Ontario, 2017b). In the 2014 – 2017 Ontario budgets, healthcare received the next highest investment in infrastructure after transit and transportation.

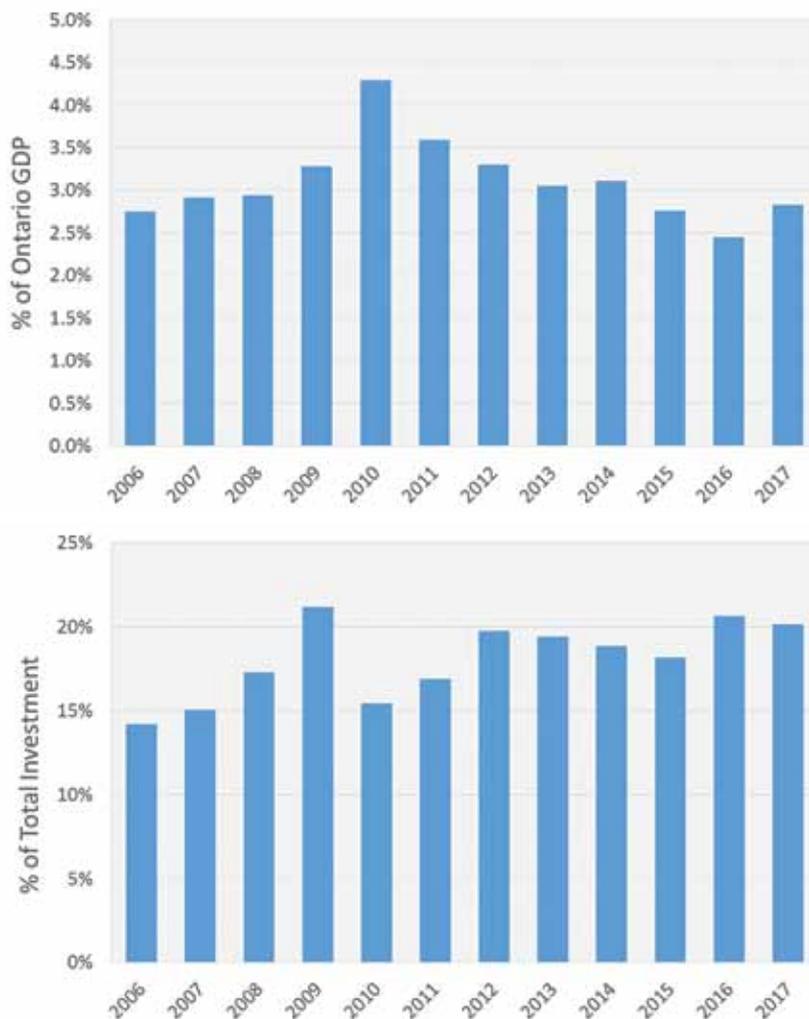
2.2 ONTARIO INFRASTRUCTURE INVESTMENT

The level of public infrastructure investment in Ontario by all tiers of government has varied considerably. Investment increased (relative to GDP) throughout the 2000s, peaking with the stimulus spending of 2009, but has since decreased.⁸ Since 2010, infrastructure investment in Ontario (as a percentage of GDP) has fallen or remained almost flat most years with 2016 the lowest percentage in the last decade. Investments in infrastructure have remained considerably below the target of 5.1% of GDP identified in earlier reports, as illustrated in Figure 1. Note that as GDP rises, a fixed dollar value of investment results in a decreasing percentage of GDP.

Maintenance, as a percentage of total investment, has remained relatively constant at about 17 – 20 % for the 2012 – 2017 period. Maintenance is considered the work required to keep an asset operating at its designed level of performance.

The 2011 analysis determined that Ontario’s optimal investment in maintenance is 22% of total infrastructure investment. If Ontario had increased its infrastructure investment from 2011 levels to reach the 5.1% target today, an additional \$53 billion would have been spent on infrastructure, with almost \$12 billion of that spent on maintenance. While recent Ontario budgets have allocated \$190 billion over the next 13 years, Ontario’s Long-Term Infrastructure Plan (Ontario, 2017b) tends to lack specific investment objectives which may contribute to delays in spending the available budget.

Figure 1: Ontario infrastructure investment as a percentage of GDP (top) and maintenance as a percentage of total investment (bottom) ⁹



In addition, a focus on projects with a high public profile, but perhaps a lower contribution to economic productivity, tends to result in lower returns on investment – an effect seen both in Canada and abroad. As a result, some jurisdictions are adopting more robust infrastructure decision-making principles to ensure greater accountability and transparency in critical infrastructure investment decisions. For example, Australia has adopted a set of 11 decision-making principles to be used to evaluate all infrastructure investments (Infrastructure Australia, 2018). These principles not only include the quantification of infrastructure investment problems and opportunities, but also independent third party assessment of significant project proposals and comprehensive post-completion reviews. All information supporting decisions and reviews should be released publicly with minimal in-confidence details involved in the process.

Furthermore, a 2018 PBO report on federal infrastructure investment shows that Ontario receives one of the lowest levels of per capita investment at \$161 compared with the national per capita average of \$703. It is important to note that such a difference in funding could be due to information gaps in federal reporting (i.e., the actual allocation of funding is more balanced, but simply not reported to the PBO), or delays in program. While less-densely populated provinces and territories such as Newfoundland and Labrador, Nunavut, and Yukon received, on average, 2.5 times the national average, it is important to note that there are efficiencies of scale in regions with higher population densities.

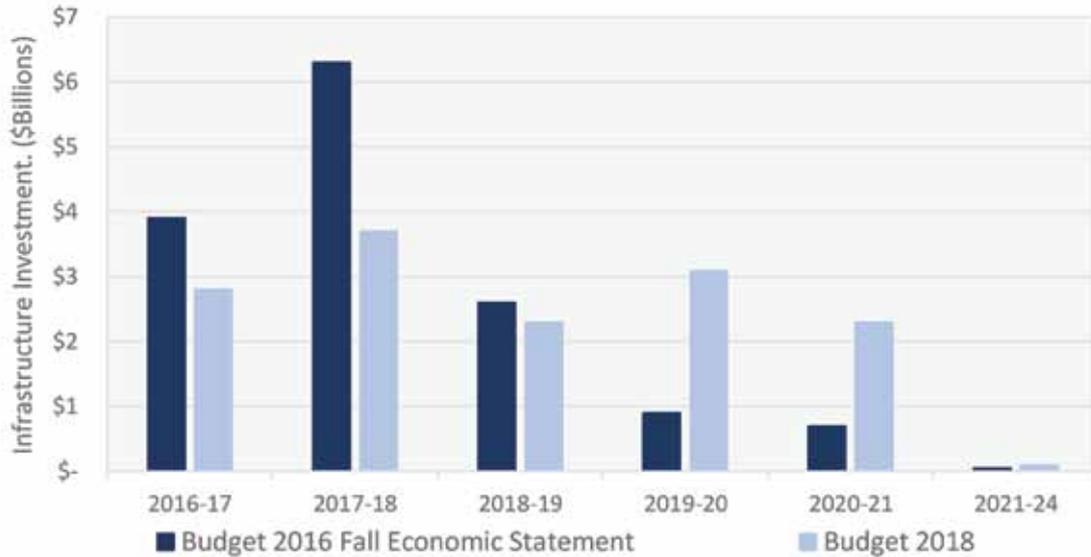
2.3 INCONSISTENCY IN DISBURSEMENT

Although the governments of both Canada and Ontario have made substantial commitments to investment in infrastructure, issues have arisen when it comes to the actual funding and completion of such infrastructure projects. Recent evaluations by the Parliamentary Budget Office (PBO) have identified important issues associated with the National Infrastructure Plan (NIP).

In a 2017 report, the PBO found that of the \$13.6 billion set out for the fiscal years 2016-18 (announced in the 2016 Budget), only \$4.5 billion (33%) has been identified. In an updated 2018 report, the PBO reported that of the total \$14.4 billion associated with Phase 1 of the NIP, only \$7.2 billion worth of approved projects have been initiated in either 2016-17 or 2017-18, leaving \$7.2 billion (50%) of Phase 1 funding unattributed.

That being said, discrepancies between estimated and realized funding may be in part due to the reimbursement process of the government, whereby spending is distributed upon submission of receipts, which may result in a lag. The discrepancy in planned and actual funding has resulted in a shift in the disbursement of funding. As highlighted in Figure 2, more than half of the money intended for short-term stimulus is planned to be spent beyond 2016-17 and 2017-18¹⁰ (Office of the Parliamentary Budget Officer, 2018).

Figure 2: Estimated infrastructure investment in 2016 and 2018 (federal)



Source: Office of the Parliamentary Budget Officer, 2018

From a provincial perspective, a review of sample projects valued at \$143.5 million, completed between 2013 and 2017, found that nearly half of the samples' completion date had been revised after the project completion date had passed, and the average completion of such projects was 330 days later than originally planned (Office of the Auditor General of Ontario, 2017).

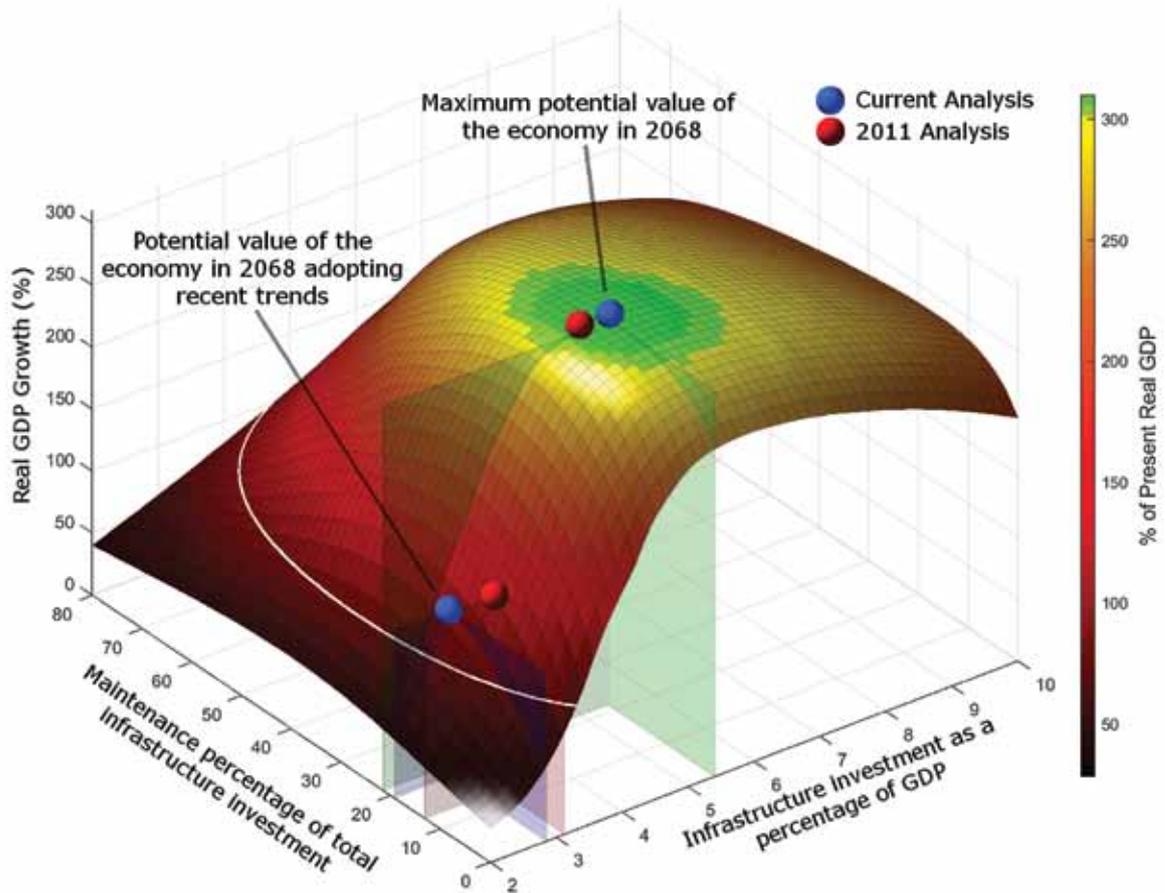
Inconsistent and sporadic infrastructure investment has been shown to be a non-preferred form of infrastructure investment, even if the same long-term average level of funding is maintained. Previous studies have shown that sporadic funding can result in a reduction in annual GDP growth of 0.15% (RiskAnalytica, 2011).

3.0 UPDATED RESULTS: 2018 INFRASTRUCTURE INVESTMENT

3.1 OPTIMAL INFRASTRUCTURE INVESTMENT IN ONTARIO

Given the lower than anticipated level of investment and maintenance since 2011, the average level of investment for maximum growth will require higher levels of investment and maintenance in the future. The optimal level has increased to 5.4% of GDP from 5.1% of GDP that was originally stated in the 2011 analysis.¹¹ This is illustrated by the red and blue dots in the green area in Figure 3. Moreover, rather than moving up the slope on the graph in Figure 3, the blue dot has slipped down. This will impede Ontario's ability to achieve maximum GDP growth unless significant efforts are made to increase investment.

Figure 3: Growth in Ontario's Real GDP (2018-2068)



As a positive, spending on maintenance (as a percentage) has been increasing. This is only in absolute terms, however, and does not take into consideration overall growth in the economy. Relative to GDP in the province and the growth of the economy, investment in infrastructure and maintenance is not keeping pace with the economy as it should be.

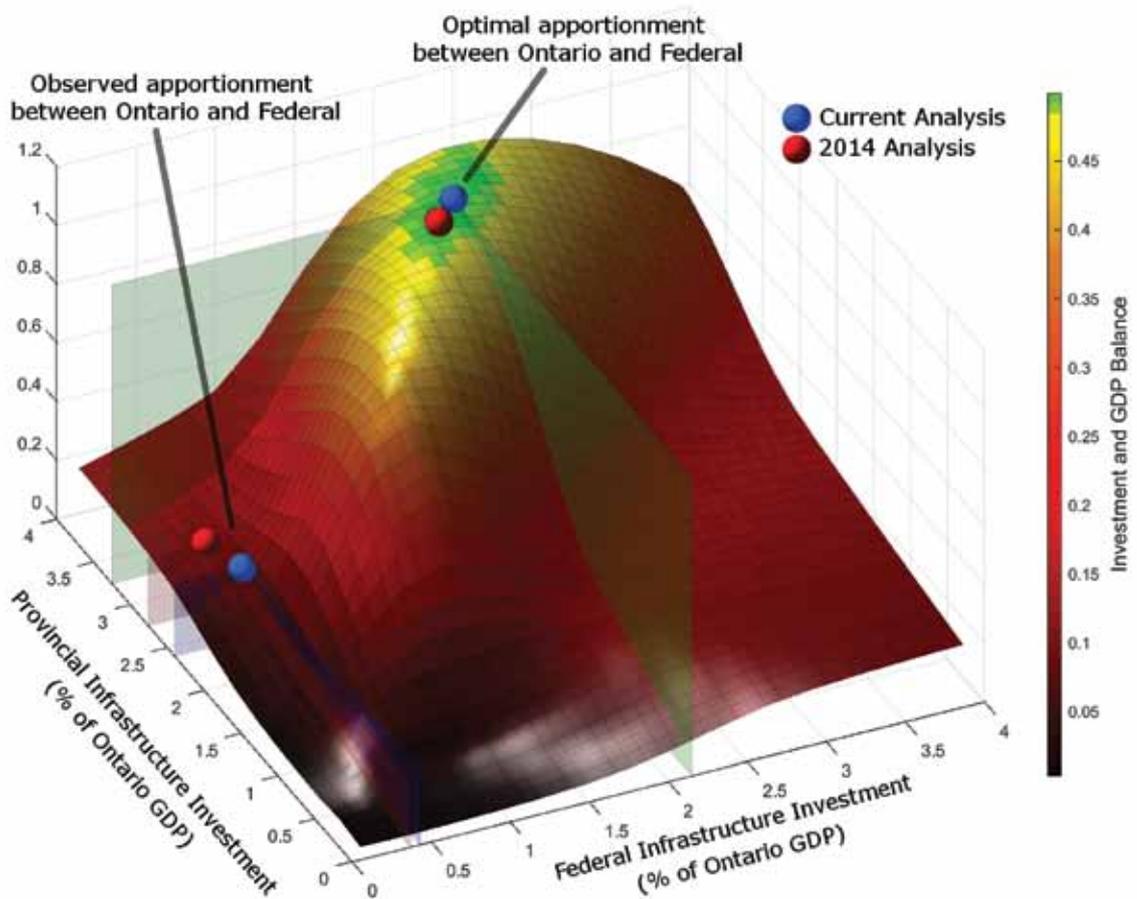
Deferment of investments will require greater investments in the future to keep up with a growing economy. This highlights how making strong investments in infrastructure today (including state of good repair contributions) ensures that larger, and perhaps unattainable, investments are not needed in the future to catch up for lost investment opportunities. This is supported by other organizations, who have found that deferring spending on maintenance for infrastructure not only results in higher costs in the future, but also reduces the longevity of the asset (Ontario Ministry of Infrastructure, Ontario Ministry of Transportation, 2016).

3.2 FEDERAL AND PROVINCIAL RISKS AND REWARDS

In addition to the overall level of infrastructure investment in Ontario, there is also the issue of the appropriate share of infrastructure investment between the different levels of government. If a sustainable public infrastructure investment strategy follows the premise of maximizing the economic returns and minimizing the economic risks for investors (in this case the different levels of government), then it would follow that an understanding of the extent to which governments benefit from such investment would guide the way financial risks should be shared. The 2014 analysis “Ontario Infrastructure Investment: Federal and Provincial Risks & Rewards” examined this question.

The analysis was repeated with the most recent data, the key result of which is shown in Figure 4. The green regions on the figure highlight the share of infrastructure investment by the federal and provincial (including municipalities) governments which both maximize economic growth and share equally in the risks and rewards of infrastructure investment. For example, if infrastructure investment increased total government revenue with 40% of the revenue going to the federal government and the remaining 60% remaining in the province, an equal share of risks and rewards would require that the federal government contribute 40% of the infrastructure investment.

Figure 4: Federal and Ontario investment balance for maximum GDP growth



As discussed in the previous section, the level of infrastructure investment required to achieve the maximum economic growth over the next 50 years will have to increase. In addition, the sharing of risks and rewards between federal and provincial investment remains significantly out of balance. Better balance could be achieved as the NIP and other federal infrastructure initiatives result in larger federal contribution. It is important to note however, that the province must maintain its investment to sustain Ontario’s economic potential. For a full overview of the risks and rewards, see Section 2 of “Ontario Infrastructure Investment: Federal and Provincial Risks and Rewards” (2014).

4.0 CONCLUDING REMARKS

Infrastructure investment in Ontario has fallen (relative to GDP) from a high of 4.2% of GDP in 2010 to below 3% today. Spending on infrastructure maintenance as a percentage of total infrastructure investment has remained relatively constant since 2011, averaging 19% of total infrastructure investment.

The relapse to lower levels of infrastructure investment has made it harder to achieve greater GDP growth in the long-term. Predictable, long-term infrastructure investments in Ontario are recommended to ensure that the province reaches its full economic potential. In order to achieve maximum real GDP growth over the next 50 years, an average 5.4% of GDP needs to be invested in infrastructure, compared to 5.1% in the original 2011 report. Delays in infrastructure investment today make it harder to reach maximum economic growth in the future.

In addition, the current updated balance of investment and rewards between the federal, Ontario and municipal levels of government appears to be unsustainable. The federal government is contributing too little relative to the amount of revenue that is generated from infrastructure investment in Ontario. The result is that the Province is still in a risky predicament: increasing infrastructure investment (via debt financing) results in continued long-term deficits, but rolling back infrastructure investment would result in greater economic setbacks.

In contrast, the federal government benefits with increased revenue when Ontario governments invest. If the federal government were to increase funding of public infrastructure in Ontario to 2.15% of Ontario's GDP, and with the Queen's Parks and the municipalities investing 3.25%, both levels of government will have equitable shares of the risks and rewards of infrastructure investment.

BIBLIOGRAPHY

Canadian Centre for Economic Analysis. (2014). *Ontario Infrastructure Investment: Federal and Provincial Risks and Rewards*. (Report commissioned by RCCAO).

Canadian Centre for Economic Analysis. (2015). *Investing in Ontario's Public Infrastructure: A Prosperity at Risk Perspective*. (Report commissioned by RCCAO and the Ontario Construction Secretariat)

Infrastructure Australia. (2018). *Infrastructure Decision-making Principles*. Retrieved from <http://infrastructureaustralia.gov.au/policy-publications/publications/infrastructure-decision-making-principles.aspx>

Infrastructure Canada. (2018). *Investing in Canada: Canada's Long-Term Infrastructure Plan*. Retrieved May 3, 2018, from <http://www.infrastructure.gc.ca/alt-format/pdf/plan/icp-pic/IC-InvestingInCanadaPlan-ENG.pdf>

Office of the Auditor General of Ontario. (2017). *Annual Report 2017, Volume 1 of 2*. Government of Ontario. Retrieved May 11, 2018, from http://www.auditor.on.ca/en/content/annualreports/arreports/en17/2017AR_v1_en_web.pdf

Office of the Parliamentary Budget Officer. (2017). *Canada's New Infrastructure Plan: 1st Report to Parliament - Following the money*. Ottawa, Canada: Government of Canada. Retrieved 5 11, 2018, from http://www.pbo-dpb.gc.ca/web/default/files/Documents/Reports/2017/NIP/New%20Infrastructure%20Plan_EN.pdf

Office of the Parliamentary Budget Officer. (2018). *Status Report on Phase 1 of the New Infrastructure Plan*. Ottawa: Government of Canada. Retrieved May 11, 2018, from http://www.pbo-dpb.gc.ca/web/default/files/Documents/Reports/2018/Infrastructure%20update/Status%20Report%20on%20Phase%201%20of%20the%20New%20Infrastructure%20Plan_EN.pdf

Ontario. (2014). *Budget 2014*. Ministry of Finance. Government of Ontario. Retrieved May 9, 2018, from <https://www.fin.gov.on.ca/en/budget/ontariobudgets/2014/bk2.html>

Ontario. (2015). *Ontario Budget 2015*. Ministry of Finance. Government of Ontario. Retrieved May 9, 2018, from <https://www.fin.gov.on.ca/en/budget/ontariobudgets/2015/>

Ontario. (2016). *Ontario Budget 2016*. Ministry of Finance. Government of Ontario. Retrieved May 9, 2018, from <https://www.fin.gov.on.ca/en/budget/ontariobudgets/2016/bk3.pdf>

Ontario. (2017). *BUILD ON, Building Better Lives: Ontario's Long-Term Infrastructure Plan - Technical Appendix*.

Ontario. (2017a). *Ontario Budget 2017*. Government of Ontario. Retrieved May 9, 2018, from <https://www.fin.gov.on.ca/en/budget/ontariobudgets/2017/infrastructure.html>

Ontario. (2017b). *BUILD ON, Building Better Lives: Ontario's Long-Term Infrastructure Plan 2017*. Ministry of Infrastructure. Government of Ontario. Retrieved May 10, 2018, from https://files.ontario.ca/ltip_narrative_aoda.pdf

Ontario. (2018). *Ontario Budget 2018*. Ministry of Finance. Government of Ontario. Retrieved May 10, 2018, from <http://budget.ontario.ca/2018/budget2018-en.pdf>

Ontario Ministry of Infrastructure. (2011). *Building Together: Jobs & Prosperity for Ontarians*. Toronto: Queen's Printer for Ontario.

Ontario Ministry of Infrastructure. (2018, March 14). *Canada and Ontario to make significant infrastructure investments that will improve the lives of Canadians*. Retrieved May 3, 2018, from Province of Ontario: <https://news.ontario.ca/moi/en/2018/03/under-the-180-billioninvesting-in.html>

Ontario Ministry of Infrastructure, Ontario Ministry of Transportation. (2016, June 9). *Building Together – Guide for municipal asset management plans*. Retrieved from Government of Ontario: <https://www.ontario.ca/page/building-together-guide-municipal-asset-management-plans#section-0>

RiskAnalytica. (2010). *Public Infrastructure Underinvestment: The Risk to Canada's Economic Growth*. RiskAnalytica. (Report commissioned by RCCAO).

RiskAnalytica. (2011). *Public Infrastructure Investment in Ontario: The Importance of Staying the Course*. RiskAnalytica. (Report commissioned by RCCAO).

ENDNOTES

- 1 “For a detailed analysis of cumulative federal and provincial tax revenues, see CANCEA (2015) “Investing in Ontario’s Public Infrastructure: A Prosperity at Risk Perspective,” with an analysis of the Greater Toronto and Hamilton Area, pp. 46-49.
- 2 Includes funds to Infrastructure Canada for community improvement fund (includes Gas Tax Fund and the incremental GST rebate for municipalities), New Building Canada Fund, Building Canada Fund, P3 Canada Fund, Green Infrastructure Fund, Other Infrastructure Canada Programs (includes Canada Strategic Infrastructure Fund, Border Infrastructure Fund, PT Base Funding, and the Inuvik to Tuktoyaktuk Project). Also includes Transport Canada funding for gateways and corridor programs, and Canada 150 budget.
- 3 Includes CMHC funding (existing housing programs), indigenous and northern affairs programs, Health Canada, employment and social development Canada, PHAC and Health Canada, homeless partnering strategy, and Canadian heritage.
- 4 Provincial allocation is assumed to be based on a 33% cost share with the Government of Canada.
- 5 Starting in 2014-15.
- 6 In the 2018 Ontario budget, an additional \$19 billion over the next 10 years was specified for capital grants to hospitals to improve the healthcare infrastructure within the province (Ontario, 2018).
- 7 Other transportation includes highway planning activities, property acquisition and other infrastructure programs.
- 8 Note this includes capital investments in buildings, engineering, machinery and equipment, but excludes investment in intellectual property (i.e. software, research and development). The non-locality of intellectual property makes assignment to a particular region difficult. For example, the location of purchase for a software license may not be the same region where the software is used. As a result, intellectual property for the federal government disproportionately lies in Ottawa which can skew intellectual property infrastructure investment statistics for Ontario.
- 9 As new information becomes available, primarily around GDP and investment, Statistics Canada updates past data tables which can result in a discrepancy between past and current reported numbers. Therefore, there may be differences between this update’s values for infrastructure investment and maintenance when compared to earlier RiskAnalytica and CANCEA reports.
- 10 Based on a reporting of departments and agencies. Note that most, but not all departments, agencies responded. Six out of 32 agencies and departments provided information after the deadline for the report.
- 11 Note that this assumes productive infrastructure investment, and not so-called “bridges to nowhere”.



View this report and more at
rcca.com