

Calgary



Photo: Tourism Calgary

Spring 2018

Calgary and Region Economic Outlook

2018 – 2023



Table of Contents

Introduction..... 3

Executive Summary..... 4

Forecast

 City of Calgary 7

 Calgary Economic Region (CER)..... 14

Assumptions

 Alberta..... 19

 Canada 24

 United States..... 29

 World..... 31

Forecast Tables..... 41

Glossary 47

Textboxes

 Textbox 1 11

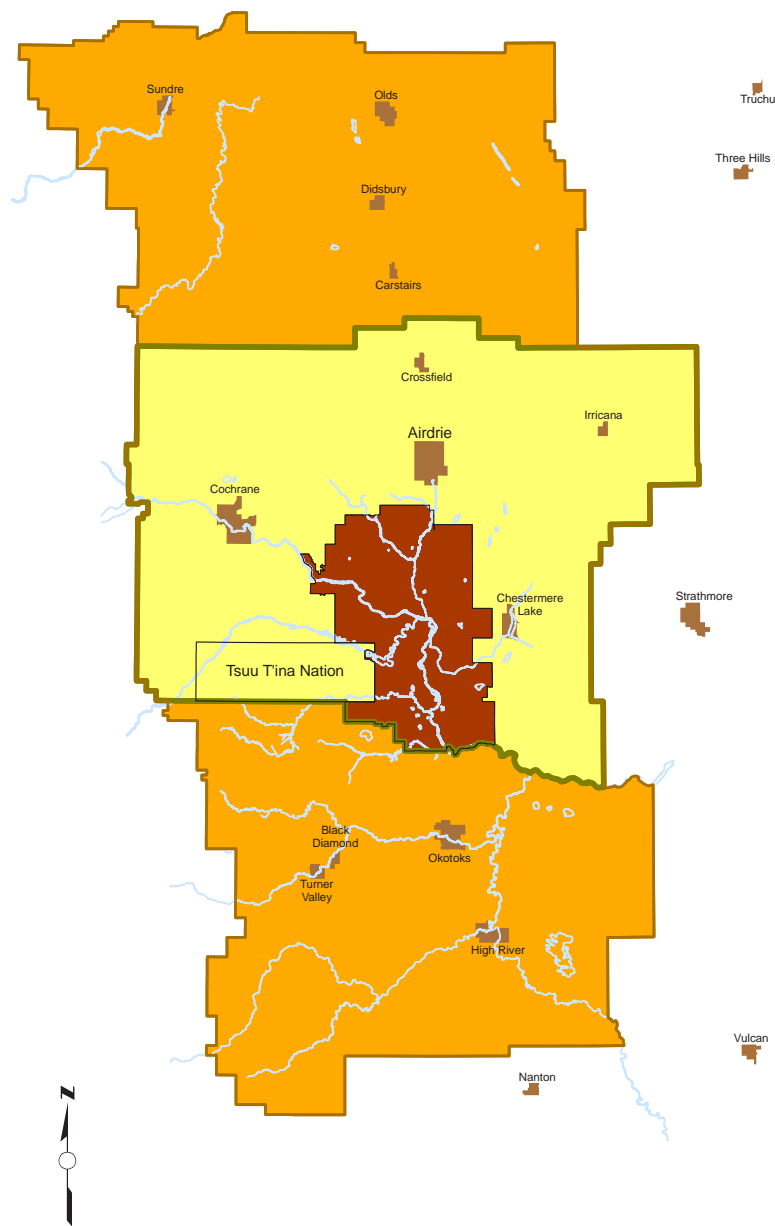
 Textbox 2 22

 Textbox 3 27

 Textbox 4 33

Who We Are 50

Calgary Economic Region Map

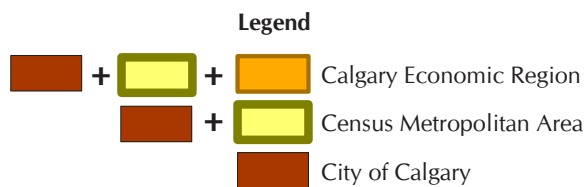


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Introduction

Preamble

The Calgary Economic Outlook is currently released twice a year and this edition covers the period 2018-2023.

The City of Calgary monitors and tracks economic indicators to develop insights on how external events are impacting the local economy throughout the year. The results of this process are published twice annually as the Calgary and Region Economic Outlook; once in the spring and then again in the fall. In it we track several key macroeconomic indicators and present forecasts for a selected number of economic variables.

We prepare this document to provide analysis of those factors that are considered most likely to have a significant effect on the local economy over the forecast period.

Purpose

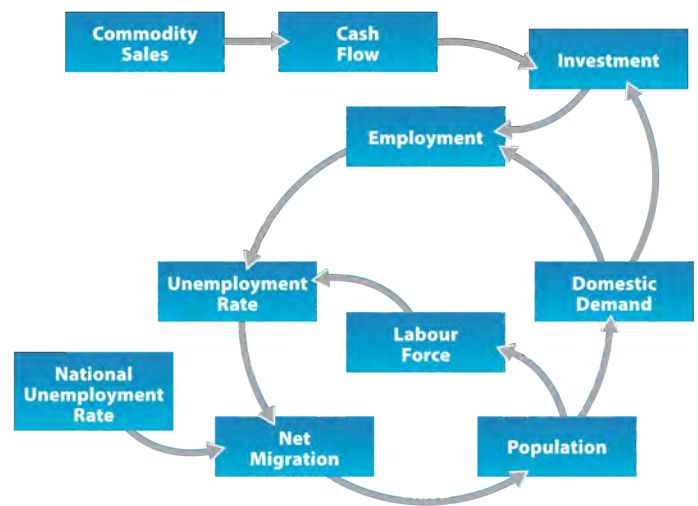
- ▶ This publication is used to assist The City of Calgary in its financial planning and budgeting for the new four year business cycle from 2019-2022. The forecast enables The City to take into consideration the current economic conditions and potential outlook to plan prudently and responsibly the financial path forward, while understanding current risks and opportunities.
- ▶ The report presents a comprehensive economic analysis of the Calgary local economy which most other economic reports exclude. Unlike most research institutions, which restrict their analyses to the Alberta economy and a few urban areas within the province, this report answers the following key questions:
 - What is the overall forecast for the rate of growth of the local Calgary economy?
 - What are the drivers of the local Calgary economy?
 - What is the expected number of jobs that will be created in the local Calgary economy?

- What is the expected population growth for the city of Calgary and its region?
- What is the expected inflation rate in the Calgary Economic Region?
- What are the implications of the forecast and how will it impact municipal finance?

Assumptions

- ▶ The study area for the economic forecast is the Calgary Economic Region (CER). The CER is a small open economy that is affected by changes outside its borders (see regional growth dynamics diagram below). For example, political instability in the world’s oil producing regions or technological changes can cause sharp increases or decreases in oil prices, which affect the Alberta energy industry’s cash flow and investment in the local economy.
- ▶ In attempting to explain the Calgary economy certain key assumptions are made about factors or activities outside its borders in Alberta, Canada, the U.S. and the world.
- ▶ Any deviations from our key assumptions will alter the forecasts provided in this report.

Regional Growth Dynamics





Executive Summary

Forecast

Calgary

- ▶ Corporate Economics prepares a population forecast after Calgary City Clerks releases the results of the annual civic census. The population forecast is usually presented as a separate report in July of each year, but for convenience the forecast is re-published in our Economic Outlooks, both the Fall and Spring editions.
- ▶ Recently the results of the 2016 Federal Census were released, as well as Statistics Canada's population estimates of the Calgary Metropolitan Area for 2017. We have re-based our 2018 Calgary Economic Region population forecast to the recent data.
- ▶ Calgary is expected to experience modest stable economic growth throughout the forecast horizon. GDP growth at 2 per cent rate is expected in line with continued modest growth in consumer spending, and non-residential investment is expected to be muted due to high condo and office vacancy rates that are expected to remain for an extended time.
- ▶ Average re-sale house MLS® prices in Calgary should fare differently depending on the type of dwelling. Single family homes are expected continue to be the preferred type of dwelling and should experience modest price increases averaging 2.5 per cent in the forecast period. Semi-detached dwellings should also experience price gains as more people elect to live in this type of dwelling.
- ▶ Construction activity in the housing sector is expected to remain below average due to lower levels of net migration, lower household formation rates, and higher interest rates. The demographics of Calgary support continued housing construction in Calgary. Particularly, over 2019-2022 we anticipate a need for 15,600 new single-family dwellings and almost 20,000 total new dwellings.

- ▶ The office vacancy rate in Calgary is expected to remain elevated above industry norms in the forecast period. The unemployment rate in Calgary is dropping but the job makeup in Calgary is shifting. Job losses because of oil prices dropping in late 2015 were mainly in engineering and technical service jobs, mostly downtown but also in Calgary's suburbs. Today, those jobs are being replaced by service level jobs that generally don't require as much office space. The outlook calls for elevated office space vacancies throughout the forecast horizon.
- ▶ The combination of weak population and employment growth and higher interest rates is expected to depress future building permit values. Relatively high vacancy rates in the multi-family residential and non-residential markets should also weigh on the construction of new space. The forecast for building permit values is \$3.6 billion in 2018, down from \$4.5 Billion in 2017.

Calgary Economic Region (CER)

- ▶ Economic activity in the CER is estimated to grow in 2017 by 3.1 per cent, after contracting 1.2 per cent in 2016. The recession is over but Calgary is now entering a slow growth cycle instead of a boom. The forecast calls for the economy to expand by 2.5 per cent in 2018 and by a more modest 2.0 per cent in 2019. The slowdown in growth is the result of increasing employment into industries that pay lower wages while rising interest rates give investors pause before spending in Canada.
- ▶ Total employment in the CER was 882,700 in 2017, slightly higher than employment in Calgary at the peak of the boom in 2015. The forecast for total employment indicates improving job prospects in Calgary with 897,500 jobs in 2018, and 910,000 in 2019. (Note that these numbers are lower than in our Fall Economic Outlook, but this is solely the result of re-basing our Calgary Economic Region to the latest census estimates.) Job growth is expected to slow by 2023 when Calgary's unemployment rate is expected to dip into the 5.3 per cent range.



Executive Summary

- ▶ Consumer prices rose by 1.7 per cent in 2017, up from 1.0 per cent a year earlier. The consumer price index inflation rate is expected to average 2.0 per cent in 2018 and 2019 as a result of increasing costs for imported goods due to a lower Canadian dollar and higher inflation pressures in the U.S. and Ontario.
- ▶ Non-Residential building costs continued to fall in the first half of 2017, but trend is now reversed. In total construction prices have fallen by 3.2 per cent since 2015. In 2018, price pressures from an increasingly active U.S. economy, higher Canadian interest rates as well as a lower Canadian dollar would cause construction costs to increase 2.9 per cent. In 2019, we expect to see a pause in construction inflation but 2020 is expected to see some pent-up inflation passed on with a 3.3 per cent increase in prices.

Assumptions¹

Alberta

- ▶ Oil prices have fallen from U.S. \$100/bbl. in 2015 to around U.S. \$50/bbl. in 2017. The outlook calls for oil prices to rise slowly and steadily, reaching U.S. \$64/bbl. by 2023.
- ▶ After 2 years of recession Alberta's economy is growing. Real GDP in Alberta is expected to grow around 2.5 per cent in 2018. After a recession, an economy usually has a bit of a surge in growth followed by more modest growth and this recession in Calgary is no different. After the spurt in 2017, growth is expected to moderate to the low 2 per cent range.

Canada

- ▶ The Bank of Canada (BoC) has begun raising interest rates. Rates have risen by 0.5 per cent this year and would increase further if higher inflation is anticipated. The Canadian dollar is expected to slow-

ly appreciate over the forecast period in response to improving economic activities.

- ▶ Real GDP growth in Canada was estimated at 3.0 per cent in 2017, supported by increases in residential investment (particularly in Ontario), government spending, and exports. This is not sustainable and changes in residential mortgage rules have tempered real estate markets which should slow activity in Toronto, Montreal and Vancouver (and to a lesser extent, in Calgary) this year. The national economy is forecast to stabilize at a 1.7 per cent range throughout the forecast.

United States

- ▶ The United States real gross domestic product is expected to grow 2.5 per cent in 2018, 2.1 per cent in 2019 and slow to the 2 per cent range for the rest of the forecast. Economies operate in cycles and one of the challenges is to correctly forecast the timing of the next cycle. Some forecasters are starting to suggest that there is increased risk that the next U.S. recession is expected to occur within the next few years, perhaps around the next U.S. federal election. We continue to monitor this situation closely.
- ▶ The U.S. Federal Reserve has begun raising interest rates and reducing its balance sheet. In the meantime, the U.S. Tax Reform provided stimulus to the already hot economy.

World

- ▶ The decline in world oil prices has given importing countries opportunities to improve their GDP while limiting GDP growth for exporting countries. Importing countries have, mostly, rebalanced their economies now and are expected to grow this year. On net, global GDP is expected to grow at an average 3.7 per cent over the forecast horizon.
- ▶ There are numerous geopolitical events ongoing around the world today. These geopolitical events represent significant risks to the forecast.

¹ All assumptions in this outlook are based on the survey results from leading national and international forecasts and financial institutions.



Executive Summary

Forecast Risks

Downside

- ▶ Fortunes have shifted for the Alberta Government. From 1994 to 2015 the Province of Alberta had a positive net financial position. The province's net financial position turned negative in 2016. The Provincial government has little capacity to further assist Calgary and other municipalities in the near future. The Provincial government has already started some budget tightening. The risk to Calgary is the degree to which the Provincial government may cut spending.
- ▶ Renegotiation of NAFTA and the Canada-U.S. softwood lumber agreements continues to represent a significant risk to the forecast, though it appears threats to impose high tariffs on Canada's steel and aluminum industries are now abated. The U.S. is embroiled in multiple international issues including NAFTA, which is creating a politically uncertain environment. In such an uncertain environment, some Canadian businesses may be waiting to see how much access they would have to U.S. customers before making investments.
- ▶ The new global oil market is one of greater efficiency, with lower prices and reduced opportunities for prices to spike up in response to local environmental or geopolitical issues. Stockpiles of oil have grown over the past 3 years. The existence of those stocks is now acting as a buffer keeping prices low. It is expected those stockpiles should return to more normal levels around 2021, but the threat of increasing exports from U.S. shale deposits would limit how high oil prices can go in the future.

Upside

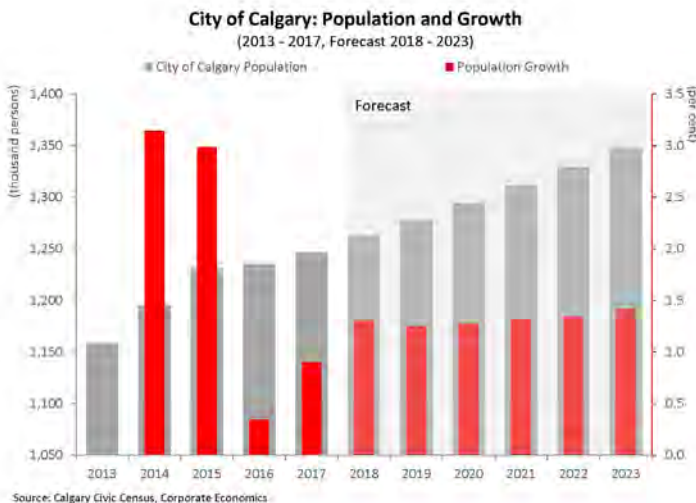
- ▶ There is significant risk to the housing forecast. Foreign investors have pumped up housing prices in Vancouver and Toronto. Both have instituted some form of foreign buyer's tax which has discouraged foreign investors. It appears that the high end of the Montreal market is the new hub of foreign residential investor activity in Canada and it is possible that foreign investors could look to Calgary during the forecast horizon due to Calgary's relative affordability. Should foreign investors descend on Calgary, housing prices could experience rapid escalation.
- ▶ Since the United States is Canada's major trading partner, a stronger U.S. dollar relative to the Canadian dollar makes Canadian manufactured goods cheaper in the U.S. The ability for the manufacturing industry to capitalize on this opportunity may help mitigate some of the adverse impacts of lower capital investment in Canada's energy sector.
- ▶ The U.S. President has declared that one of his goals would be to re-invigorate U.S. public infrastructure. Airports, infrastructure along the U.S. southern border, and highways are all on the agenda for improvement. If large public works projects are undertaken this should result in more jobs which would, in turn, increase demand for residential housing. Greater construction and economic activity in the U.S. encourages greater energy imports from Alberta. It also implies a larger market for the export of Alberta expertise in engineering and design.

Forecast

City of Calgary

City of Calgary: Population

- ▶ In 2015, while Calgary was experiencing an economic recession which carried into 2016, the population size increased from 1,231,000 to 1,235,000 persons in the city of Calgary. The recession hit Calgary hard in 2016 and population growth decreased from 2.9 per cent in 2015 to 0.35 per cent in 2016. Reduced prospects for employment, induced by lower oil prices, was the primary reason. In 2017, Calgary began its exit out of the economic downturn and population growth increased by 0.9 per cent. As economic growth prospects continue to improve relative to the rest of Canada, it is estimated that population growth will average 1.3 per cent over 2018-2023. By 2023 the population of the city of Calgary should increase to 1,344,000.
- ▶ As population increases, demand for municipal services are impacted, including: transit, waste and recycling, police, fire, parks and recreation, community services, housing demand and a host of others. Population drives demand for these services and, as such, ties directly to municipal financial and physical planning.

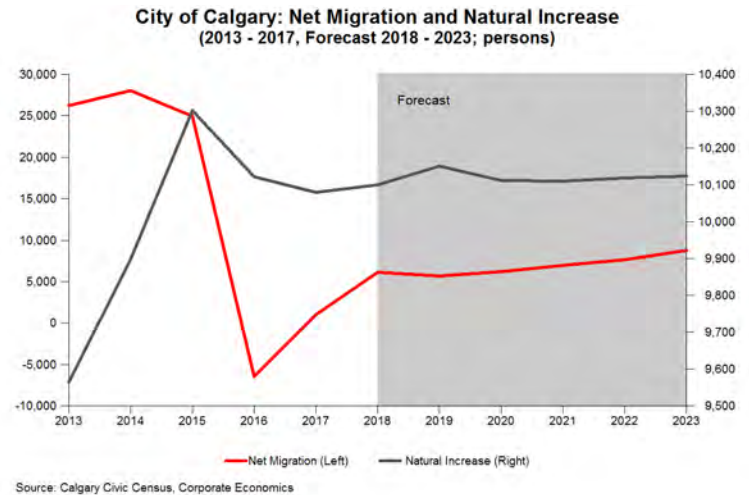


City of Calgary: Net Migration

- ▶ During the oil peak of 2014 net migration to Calgary spiked to 28,000 persons. In 2016 more people left Calgary than arrived and Calgary's net migration was -6,500 persons. As the employment prospects in 2017 improved in Calgary, net migration increased to 1,000 persons and is expected to increase further to 1,900 in 2018. As the unemployment rate relative to the rest of Canada continues to fall, Calgary is poised for further increases in net migration averaging 7,000 persons within the forecast horizon 2019-2023.

City of Calgary: Natural Increase

- ▶ The natural increase is the difference between total births and deaths. When there are more births than deaths population increases "naturally", but this dynamic dramatically affects population demographics which must be considered when providing services to the local economy.
- ▶ The female fertility rate impacts births and has remained relatively stable over the last 8 years at 1.8 births per female aged 13 to 49. This rate is expected to remain relatively stable within the forecast horizon. Our population model relies on fertility rates per different ages of women in Calgary (see Textbox 1).



Forecast

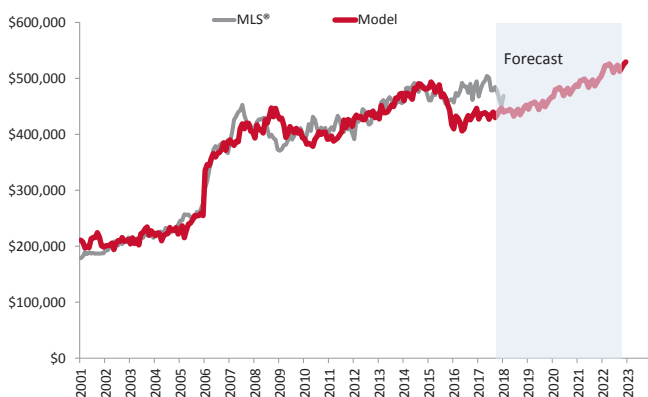
- ▶ On the other side of the equation are deaths. It is expected that within the forecast horizon the death rate per 1,000 persons will average 6.3 deaths compared to 5.8 deaths per 1,000 persons ten years ago, due to population aging. Our population model relies on death rates in Alberta broken down by age and sex. Those rates have not changed significantly over the past 10 years. This reveals that the increasing overall death rate in Calgary is purely the result of an aging population.
- ▶ Natural increase in the city of Calgary has averaged 10,100 persons per year over the last 6 years and is expected to trend slightly downwards over the forecast period.

Real Estate Markets

Residential Sector

- ▶ Residential housing prices in Calgary have been resilient to changes in oil prices. This is an example of what economists call the “Ratchet Effect”. When prices rise they tend to go up easily, but when markets turn prices tend to be sticky. This means that instead of prices going down the number of sales drop. For example, suppose a home owner bought a house for \$450,000 a few years ago and they decide to sell. If the market is up the home owners are happy to sell at \$460,000. However, if the market is weak and they could only realize \$430,000 if they sold, they are more likely to wait until prices go back up rather than sell at a loss.

Calgary: Average MLS® Prices
(2001 - 2017, Forecast 2018 - 2023)



Source: CREB, Corporate Economics

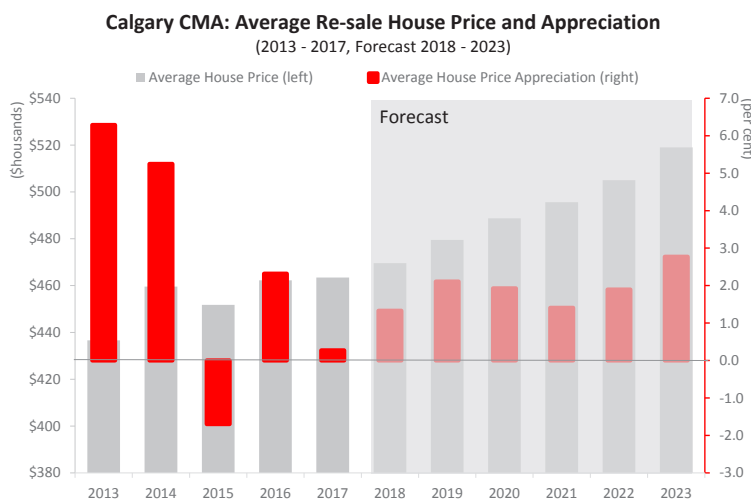
- ▶ This dynamic has played out in Calgary over the past couple years and we expect it to continue for the rest of this year. Next year, we anticipate that normal inflationary pressures would catch up to people’s expectations of what their homes are worth and the market should normalize with modest house price escalation and increased sales activity.
- ▶ Each market segment will fare differently though.
 - Single Family detached dwellings are the preferred type of dwelling in Calgary. Prices are dependent on availability of land, raw material prices, wages and energy prices, but prices are primarily determined by demand. Demand remains strong and prices for detached dwellings have remained resilient to oil price changes. We anticipate continued high demand for this type of dwelling and continued price escalation.
 - Attached dwellings are typically priced 25 per cent lower than a single-family home. Housing affordability issues have increased the demand for this type of dwelling over the past 10 years. The outlook for this segment is positive and we anticipate greater numbers of Calgarians to consider this housing option as interest rates rise in the future.
 - The apartment/high rise condo market has faltered recently with vacancies in apartment type dwellings over 10 per cent in Calgary. An overbuild in this market segment occurred at a time when the demographic demand for this type of dwelling stalled. The current glut of apartment/condo dwellings in Calgary is driving prices down in this market segment. We currently anticipate growth in Calgary’s population and resulting growth in demand for condos, should normalize this market segment around 2027. If Calgary can attract some condo buyers, who would otherwise choose to live just outside Calgary’s borders, this could be advanced to 2024. Until the market stabilizes we expect a buyers’ market will persist in the Calgary condo market.

- ▶ To manage the housing mortgage debt in Canada, the Bank of Canada requires lending institutions to

Forecast

carry out stress testing. Now, for a home buyer to qualify to purchase a home they must be financially able to support a mortgage with an interest rate 200 basis points above prevailing rates. Though this ensures there would be fewer personal bankruptcies, it also impacts affordability.

- ▶ House price appreciation is estimated at 1.4 per cent in 2018, as the improved economic conditions of 2017 encourage both business and consumer confidence, despite the new mortgage stress test rules discussed earlier. In 2019, average house prices are expected to appreciate by 2.8 per cent and fluctuate between 1.2 and 3.4 per cent per year over the forecast period.



Source: The Canadian Real Estate Association, Corporate Economics

Non-Residential Sector

- ▶ The recent run-up in global energy prices has increased prices for imported construction materials in Alberta beyond our original expectations. Muted construction inflation in Alberta as a result of a moderately improving economy, is now outweighed by price pressures from south of the border for imported construction materials.
- ▶ Compared to the boom years of 2007 when construction inflation in Calgary exceeded 17 per cent per year, today's construction inflation which is just shy of 3 per cent is quite low.

- ▶ Longer term, increased cost pressures from increased world oil prices, increased domestic interest rates and a continued low valued Canadian dollar would conspire to see Calgary non-residential building inflation average 2.4 per cent per year over the next 5 years.

Office Space

- ▶ Vacancy rates in Calgary's downtown office sector continue to be elevated compared to historical norms. Now hovering at just over 23 per cent there is about 17 million square feet of head lease space available out of an inventory of an estimated 72.75 million square feet.
- ▶ Office rents and vacancies follow a business cycle. Currently Calgary is at the low point in the cycle. Currently, total gross rents in the downtown core are averaging just over \$30 / sq. ft. The last time rents were in that range was during the low point of the last cycle, which occurred between September 2011 and December 2012.
- ▶ Our updated employment forecast for this Outlook reflects the fact that employment in Calgary is shifting. New jobs in Calgary are more concentrated in the service industry as opposed to office type jobs that used to form the majority of new jobs in Calgary. As a result of the shifting makeup of employment in Calgary our updated office vacancy forecast for the downtown core shows an extended period of historically high vacancy rates.
- ▶ Our forecast indicates a slowly dropping vacancy rate from 23.3 per cent today to 12.5 per cent by 2026. Correspondingly, we anticipate gross rents would rise slowly over that time from just over \$30 per sq. ft. today to just under \$40 / sq. ft. by 2024 due to the improving job market in Calgary.
- ▶ The last period that Calgary had such a prolonged glut of office space was in the late 80's to the mid 90's. Over that time only one major office building was added to Calgary's downtown skyline, Banker's Hall West. It would appear the long period cycle is now repeating.

Forecast

Office Space in Calgary by Class

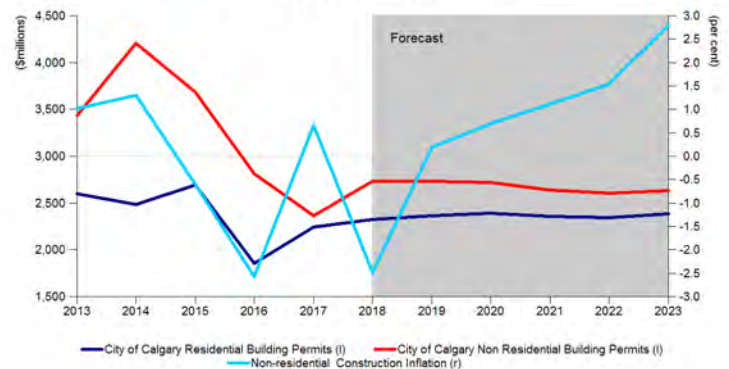
- ▶ Offices are identified by quality. The newest buildings with the most amenities are class A or AA. Ones with fewer amenities or older structures may be Class B and as they age may fall to Class C. Few office buildings retain positive cash flow for owners if their quality drops to Class D.
- ▶ The vacancy rate in Downtown Calgary office space class C was 26 per cent in 2017 and is expected to increase to 29 per cent in 2018. Renters are jumping from class C type structures to class A and B, which have now become relatively cheaper due to unprecedented high vacancy rates. The office vacancy rates in class A and B are expected to drop from 20 and 30 per cent in 2017 to 15 and 27 per cent in 2018 respectively.
- ▶ The forecast for 2019 puts the vacancy rate of class A at 17 per cent, class B at 24 per cent and class C at 26 per cent, and averaging 16 per cent for class A, and 20 per cent for class B and C over the forecast horizon. It is going to take some time to unwind the excess office inventory which currently exists in Downtown Calgary and Greater Calgary. The era of 100 dollar per barrel oil which drove significant investment in Alberta is not currently on the horizon and expectations of economic growth have tapered significantly going forward.

Building Investment and Construction Costs

- ▶ Our measure of investment intentions for the city of Calgary is the building permit values. It is estimated that total building permit values will reach 3.6 billion dollars in 2018, and 4.0 billion dollars in 2019, down from \$4.5 Billion in 2017. Though the change in building codes² drove investment intentions higher in 2015 and, the share of residential investment intentions averaged 59 per cent of total investment intentions between 2013 and 2016. The share of residential investment intention is es-

timated to average 66 per cent per annum within the forecast horizon 2019-2023. Total investment intentions would average 4.0 billion dollars within the forecast horizon and reach 4.1 billion dollars in 2023.

City of Calgary: Building Permit Values and Non Residential Price Inflation (2013 - 2017, Forecast 2018 - 2023)



Source: The City of Calgary, Corporate Economics

- ▶ The non-residential construction price index is estimated to be 2.9 per cent in 2018 due to higher oil prices, a lower Canadian dollar and higher inflation in the U.S. as the economy south of the border continues to climb. Next year, we anticipate a bit of a pause on oil price increases and a resulting pause on non-residential building inflation before more cost pressures from south of the border are passed on to Calgary construction projects in 2020 with a 3.3 per cent increase.

² The National Energy Code of Canada for Buildings 2011 was adopted by the Province of Alberta in 2015. It came into force on November 1, 2015 with a transition period that ended May 1, 2016. These rules dramatically increased the cost to construct high-rise dwellings in Calgary

Textbox 1: Calgary's Population Forecast and Demographic Driven Housing Demand Model

Calgary's demographic driven housing demand model is compiled using Calgary's population model and data from Calgary City Clerks.

1. Population Forecast Model

Corporate Economics has maintained the City of Calgary's population forecast models for well over 20 years now. Over time the population model has evolved, starting as a collection of inter-linked spreadsheets in Lotus 1-2-3, the population model currently in use is written in a modified form of FORTRAN using the Canadian econometrics software, Shazam, with data exported from that package into Excel spreadsheets for further analysis. Originally, we used 5-year life-cycle cohort models. They worked very well at predicting city population a couple years into the future, but we discovered they significantly overestimate the population in Calgary beyond 3 years into the future. The problem is that Calgary's net migration is highly volatile. With highly volatile net migration 5-year cohort models suffer from an inherent over-estimation bias. When net migration is volatile 5 year cohort models do not accurately age people between the cohorts. This is a significant problem in places where a high proportion of the population is in child bearing years. The further out 5 year cohort models are run, under these conditions, errors multiply as the excess population in childbearing years in the model are computed to have children. As such, we have found that the only modeling technique that accurately predicts population in Calgary is the single year cohort model.

Calgary's single year population cohort model starts with a breakdown of the current population by sex and by every age. Instead of modeling what happens to people aged 5 to 9, we must model what happens to people, for example, aged 5, then we model what happens to people age 6 separately, and so on. Data from the annual City of Calgary civic census is used

for 5-year cohort information and to reveal the profiles of each age within each 5-year cohort we turn to data from health registries in Alberta. Once we have the age and sex breakdown for the city of Calgary, we perform similar estimates using Federal Census data and health registry data to yield the age and sex profiles in the Calgary Economic Region as well.

Federal Census are done infrequently. The longer between one census and the next the greater likelihood that inter-census estimates will diverge from actuals. In this Economic Outlook, we re-based our forecast model for the Calgary Economic Region using the recently available 2016 Federal Census data, as well as the 2017 Statistics Canada estimates of the population growth rate in the Calgary Metropolitan Area. The population forecast for the Calgary Economic Region in this Spring Outlook reflects the most currently available data on the population outside of Calgary's municipal borders.

After the initial conditions are set, we compute the number of expected births in one calendar year based on fertility information we obtain from Service Alberta's vital statistics annual reviews. It is important to note that we do not look at the overall fertility rate of about 1.6 babies per female over a female's lifetime. Instead, we look to the probability that any female (within the age range of 13 to 49) would have a child over a single calendar year. After that, all persons in the model are aged one year (this solves the over-estimation problem we observe with 5-year cohort models) and then we forecast deaths, by age and sex again using data from Alberta vital statistics annual review.

Net migration is modeled with a two-stage process. The total number of net migrants is forecast using econometric models which incorporate such things as historical averages and the relative ease of getting a job in Calgary compared to Toronto and Vancouver,

as well as housing affordability factors to name a few. In 2010, we looked at Calgary's net migration and reverse engineered the city and CER populations over a 10-year period. We knew what the initial population profiles were, the number of births and deaths by age and the total number of net migrants. We computed the profile of net migration for both the city and the CER that had to occur over that 10-year period for the model to predict exactly what we saw transpire. We use those net migration profiles in our current population model. Over 2004-2014 we tested the accuracy of our population model and are happy to report that one year ahead our population model averaged an accuracy rate of 99.999 per cent. Two years ahead the average accuracy was 99.7 per cent and 4 years ahead the average accuracy was 97 per cent.

2. Demographic Driven Housing Demand Model

To compute the demographic driven demand model used to be a very onerous process. Today, with technological advances, City Clerks is now able to compute this table directly from collected census data so we don't have to estimate these figures. The demographic driven demand model is simply the marrying of our city population model with the table which shows in which types of dwellings Calgarians actually live.

Taken together they produce a forecast of the total number of dwellings, by structure type, that Calgarians desire to call home in the future. Recently we have encountered a significant issue regarding the forecast for condo/apartments in Calgary. The age demographic that typically resides in this dwelling is not growing, in fact it is shrinking. As a result, the demand for these type of dwellings is stagnating. At the same time, Alberta building codes³ changed recently and developers rushed to advance many condo projects to get their projects done at lower cost than if they waited. The result is a glut in the cur-

rent condo market in Calgary. Currently, the vacancy rate among condos in Calgary is around 10 per cent. We have prepared our city of Calgary demographic driven demand forecast model based on a balanced market condition of 5 per cent vacancy. That is, with the current glut of condos there is, strictly speaking, no need for any new ones to be built in Calgary right now. Our model presumes that none would be built until demographic demands warrant it and we presume that would occur when market vacancies fall to 5 per cent. Condos are currently being built in Calgary so the difference between the model and what is happening requires explanation. We are seeing some things in Calgary that the model is not picking up: 1) Some builders are proceeding with planned projects because costs have already been incurred with no options to stop, and; 2) some builders perceive that their projects are premium and can take market share from others that they view as less desirable. Building for either of these reasons, on a market wide basis, does nothing but push out the date when we expect this market to balance. There is another interesting interpretation, but this requires some introduction.

This year, in response to some criticism from Calgary's building industry that the housing market stretches beyond Calgary's municipal borders, we have extrapolated our demographic driven demand model to include the Calgary Economic Region. Conveniently we had already updated our population model of the Calgary Economic Region to be based upon data from the 2016 Federal Census, as well as, the 2017 Statistics Canada estimates of the population growth rate in the Calgary Metropolitan Area. The 2016 Federal Census also gave us a breakdown of available housing in the CER as well. We were able to match this up with the 2016 Calgary Census counts of population to produce an estimate of the total number of dwellings in the CER, by housing type, in 2017 (our current forecasting base year). We utilized our existing information on how many people reside in what type of dwelling in Calgary (which covers 80 per cent of the population of the CER) and re-calibrated the number of persons per household in our model so that the model output for 2017 matched our estimate of the actual number of houses in the CER. This is

³ The National Energy Code of Canada for Buildings 2011 was adopted by the Province of Alberta in 2015. It came into force on November 1, 2015 with a transition period that ended May 1, 2016. These rules dramatically increased the cost to construct high-rise dwellings in Calgary.



Forecast

the same procedure that previously gave us 99.998 per cent theoretical accuracy when we started doing demographic driven housing demand forecasting in 2012.

Not too surprisingly, the combined models show that Calgary's share of the CER housing market varies by housing type. Over 2019 to 2022 (The City of Calgary's next budgetary cycle), we anticipate Calgary should capture 89 per cent of the single-family market, 93 per cent of the duplex market, 98 per cent of the townhouse / row market, and 64 per cent of other miscellaneous markets. The demand for apartment/condo type units outside Calgary is estimated at 4,400 units over 2019 to 2022, while if we look solely within the city's borders, Calgary is experiencing a glut of condos. It may be that some of the new condo development currently happening in Calgary is capturing some of the market share of condos which otherwise would be demanded just outside Calgary's borders. Unfortunately, there just isn't enough market outside the city's borders to absorb Calgary's glut. Even so, if Calgary could capture the entirety of the condo market in the CER this would advance our projected date of condo market balance in Calgary from early 2027 to 2024.

Calgary Economic Region

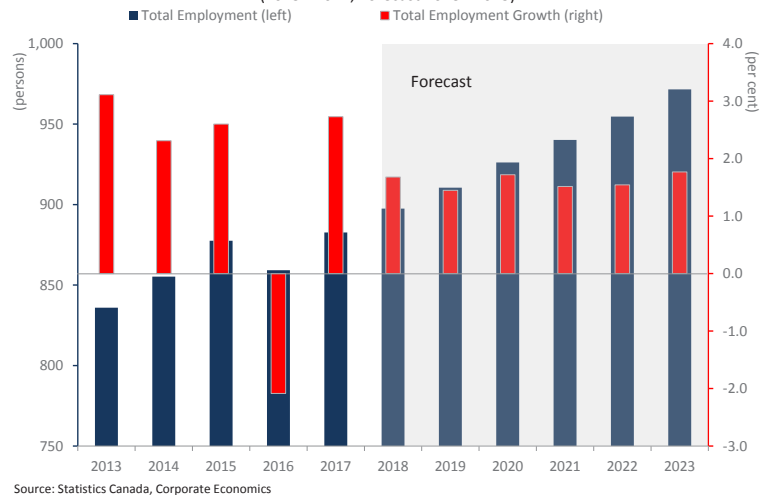
Labour Market

- ▶ Employment in the Calgary economic region grew by 2.73 per cent in 2017 as the economy began a new business cycle. Numerically, all 18,000 jobs lost in 2016 plus 5,000 more jobs were added to the Calgary economy. However, the 18,000 jobs lost were high paying and the ones that replaced them in 2017 are not.
- ▶ Total employment in 2017 was 882,700 and is estimated to reach 897,500 in 2018, showing growth of 1.7 per cent with a further 1.4 per cent increase in growth expected in 2019. Employment growth is expected to average 1.6 per cent over the forecast horizon 2019-2023.
- ▶ The unemployment rate, which reached 9.0 per cent in 2016 and dropped to 8.6 per cent in 2017, is expected to drop to 7.8 per cent in 2018. These are encouraging signs as business and consumer confidence rise, and investment intentions firm up. The unemployment rate is expected to hit 6.3 per cent by 2021, and if the relative unemployment rate between Calgary and the rest of Canada improves, we should expect stronger net migration of job seekers into the Calgary Economic Region.

Gross Domestic Product (GDP)

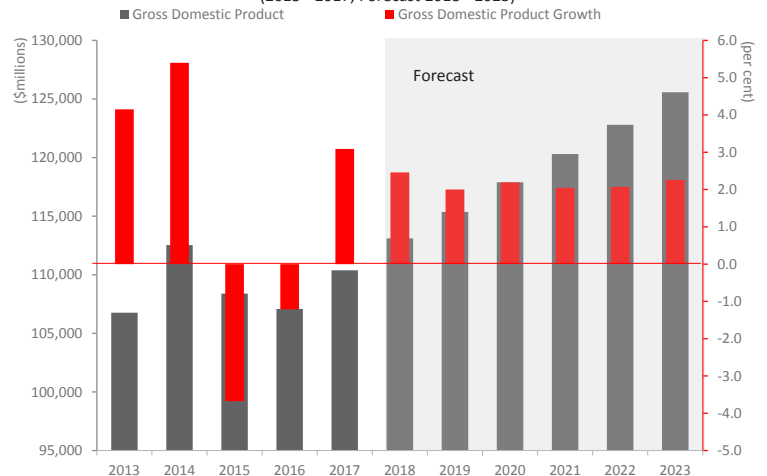
- ▶ Calgary Economic Region was in a recession for two consecutive years, 2015 and 2016. In 2017, real gross domestic product (GDP) growth increased to 3 per cent in the region signifying the start of a new business cycle. Employment has improved with positive spin-off effects for business and consumer confidence. Real gross domestic product growth is estimated at 2.5 per cent in 2018 and forecasted to grow at 2 per cent in 2019, and then average 2.1 per cent within the forecast horizon.
- ▶ Real Investment in the Calgary Economic Region has been increasing since 2014. In 2014, non-residential investment was estimated at 17 billion dollars and has grown annually at 3.5 per cent per year. Investment in 2018 is estimated to be 17.3 billion dollars, however, investment growth going forward is expected to slow to 1.7 per cent per year. High vacancy rates in both high-rise condos and downtown offices are giving investors pause.

CER: Employment and Employment Growth
(2013 - 2017, Forecast 2018 - 2023)



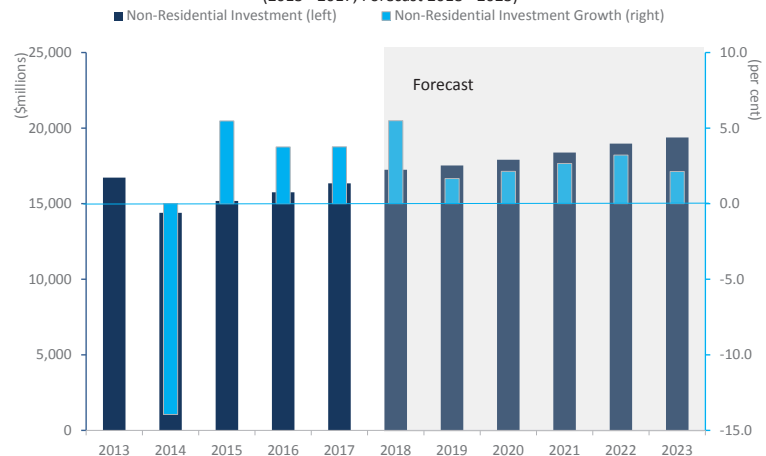
Source: Statistics Canada, Corporate Economics

CER: Real Gross Domestic Product and Growth
(2013 - 2017, Forecast 2018 - 2023)



Source: Statistics Canada, Corporate Economics

CER: Real Investment and Investment Growth
(2013 - 2017, Forecast 2018 - 2023)



Source: Statistics Canada, Corporate Economics

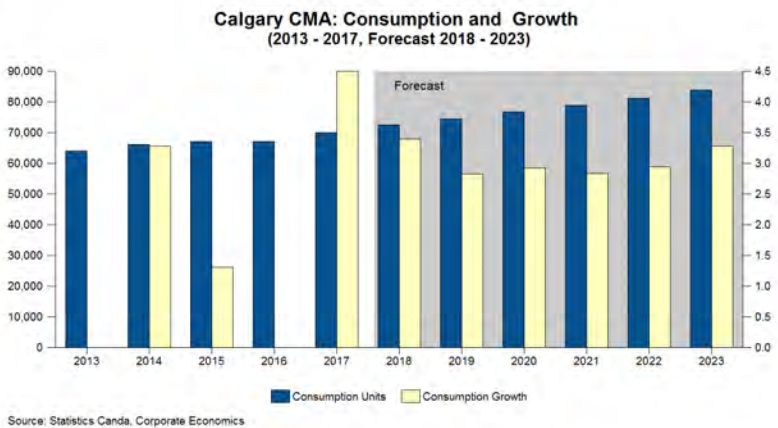
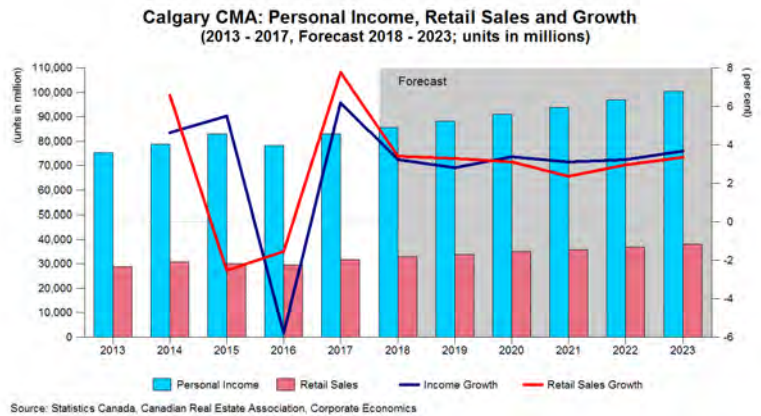
Consumer Price Index

- ▶ The consumer price index captures the price pressures typically faced by an urban dweller. The Bank of Canada practices inflation targeting and their current target is to keep national inflation in the 1 to 3 per cent range. When inflation grows beyond 2 per cent then The Bank of Canada is inclined to increase interest rates to offset the inflationary pressures. Conversely, when inflation is lower the Bank tends to lower interest rates or undertakes other market activities like buying low return corporate bonds on the open market (this has been called “quantitative easing”). Lower interest rates tend to encourage business to invest and households to increase consumption. Over time, their spending activity creates upward pressures on prices.
- ▶ Interest rates also affect exchange rates. If interest rates are low investors would tend to buy foreign bonds with higher returns than Canadian ones. This drives capital out of the country which depreciates the Canadian dollar.
- ▶ In 2016, inflation in Calgary was 0.97 per cent. As Calgary edged out of recession consumer inflation likewise edged up to 1.7 per cent in 2017. Calgary inflation is estimated to reach 2.0 per cent in 2018. Inflation in Calgary averaged 2.6 per cent per annum between 1986 and 2014 as Calgary’s economy was too small to influence the Bank of Canada interest rate decisions. With the slower pace of growth forecast, Calgary consumer price inflation is expected to average 2.0 per cent over the forecast horizon 2019-2023.

Household Income and Retail Sales

- ▶ Consumer spending is expected to play a bigger role stimulating the economy in the future as business investment, in the form of conventional and non-conventional oil capital investment projects, take a back seat compared to pre-recession levels.

- ▶ In 2017, household income grew by 6.2 per cent while retail sales and total consumption increased by 7.8 and 4.5 per cent in response. Household income is estimated to grow at 3.2 per cent in 2018, while retail sales and total consumption are estimated to follow at 3.4 per cent in 2018.

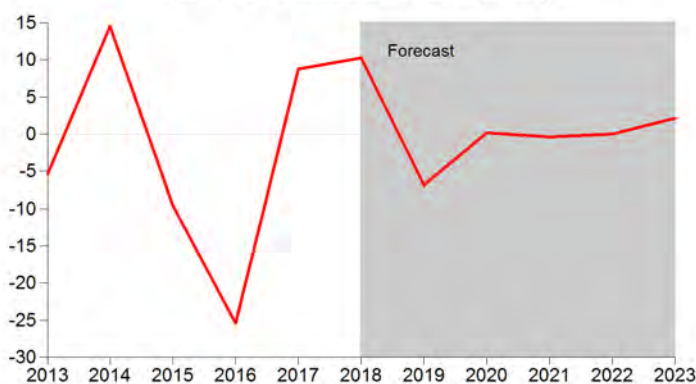


Commodities Prices

Asphalt

- ▶ Public works projects in Canada continue to support Asphalt prices. Indeed, should public works projects suddenly revert to more normal levels our models show Asphalt prices would drop by almost 25 per cent.
- ▶ Rising global oil prices have not migrated to land-locked, and export restrained, Alberta. With interest rates expected to take a modest expansionary path the outlook for the Canadian dollar is to continue in the doldrums. Combined, this bodes for an uplift in Asphalt prices in Alberta this year and thereafter a very stable pricing environment.
- ▶ There are two large risks to this forecast. Should export capacity out of Alberta suddenly increase Asphalt prices should be expected to suddenly rise. Also, ongoing trade disputes with the U.S. pose a significant risk. At the time of writing the U.S. proposed significant new tariffs for Canadian exports to the U.S. Should tariffs suddenly rise for the export of Canadian goods the impact to the Alberta economy could be significant. This could dramatically reduce demand for Asphalt and result in more Asphalt being land-locked in Alberta. The result is that prices could drop significantly, yet local and provincial governments would be unable to take advantage of those lower prices.

Asphalt Price Inflation
(2013 - 2017, Forecast 2018 - 2023; per cent)

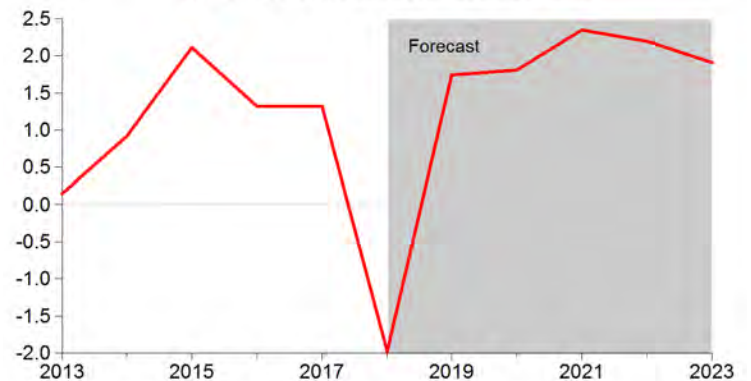


Source: Ontario Ministry of Transportation, Statistics Canada, Corporate Economics

Automotive Parts

- ▶ A lower exchange rate should provide further assistance to Ontario manufacturers competing with Mexico for the U.S. customer.

Automotive Parts Price Inflation
(2013 - 2017, Forecast 2018 - 2023; per cent)



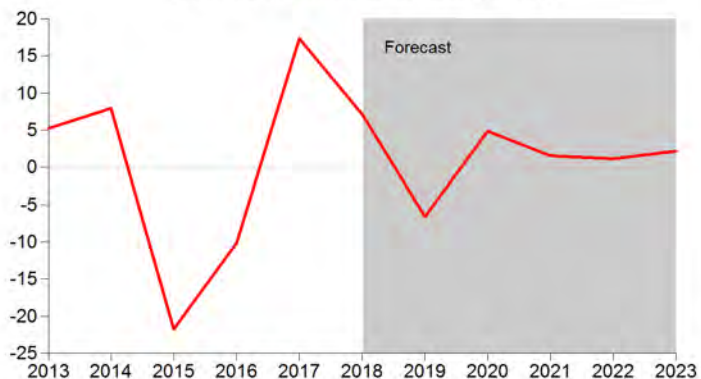
Source: Statistics Canada, Corporate Economics

Diesel

- ▶ An exceptionally cold winter in western Canada drove up demand for diesel. This drove up prices in the short term.
- ▶ The oil price outlook for Alberta oil remains muted as pipeline capacity remains constrained. Rail companies are feverishly trying to increase their capacity to export more crude but safety and practical constraints would limit the possibilities. Continued increases in carbon taxes should continue to drive up the price of diesel
- ▶ Our forecast for diesel prices is to average 113 cents per liter in 2018, drop to 105 in 2019 on a warmer winter, and climb to 113 cents per liter by 2022, continuing to climb to 122 cents per liter by the end of the forecast horizon. This forecast is higher than our Fall forecast because we explicitly recognize the shortage of refinery capacity in Alberta and have included a premium on importing diesel into Alberta to reflect it in this forecast.

Forecast

Diesel Oil Price Inflation
(2013 - 2017, Forecast 2018 - 2023; per cent)



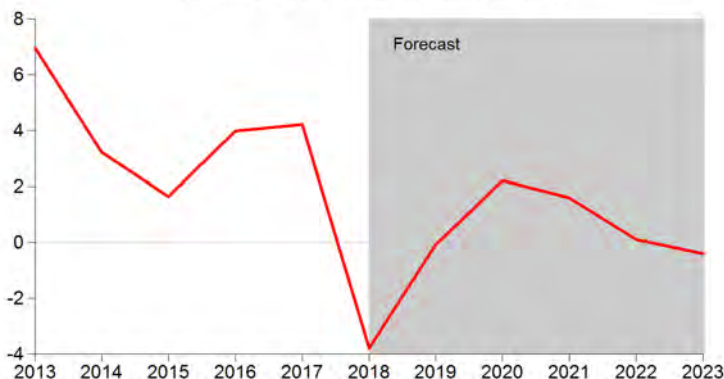
Source: Statistics Canada, Corporate Economics

Wood

- ▶ The U.S. imposed new tariffs on Canadian softwood at the start of 2017. This has driven up prices, both foreign and domestic, for Canadian softwood. Further, there is talk about an improving economy in the U.S. resulting in more home building. More homes are indeed being built but the increased activity is in duplexes and 4-plexes, not single-family dwellings. Nevertheless, this does represent an increase in demand for softwood lumber in the U.S. Retail prices for softwood in Alberta are currently escalated by about 20 per cent because of the new tariff, and increased demand in the U.S.
- ▶ The ongoing softwood lumber agreement negotiations with the U.S. are now tied with NAFTA negotiations, which have been broadsided with new Steel and Aluminum tariff announcements. Prices are up but employment in the industry is muted because of uncertainty over how the future is expected to play out.
- ▶ Our forecast of wood prices in Alberta shows decreased price pressure in 2018 and 2019 as a result of increased interest rates in Canada and the negative impact that is expected to have on the Alberta construction industry. After 2019, we anticipate only modest price increases that do not keep pace with inflation. With all the uncertainty over the industry in the short term, and with only mod-

est price changes in the forecast, it is unlikely that the Alberta forestry industry should be able to increase its employment or take any significant advantage of improving economic conditions south of the border.

Wood Price Inflation
(2013 - 2017, Forecast 2018 - 2023; per cent)



Source: Statistics Canada, Corporate Economics

Aluminum

- ▶ Aluminum prices continue to be highly volatile with dramatic shifts, largely the result of changes in demand and changes in electricity prices (electricity is the primary input in the process which translates bauxite into aluminum).
- ▶ U.S. automotive manufacturers have shifted their intended utilization of aluminum in the automotive sector. Increased demand for the automotive use of aluminum is increasing the price for aluminum over the short term.
- ▶ Speculation about construction of the southern U.S. wall continues to drive up aluminum prices this year. The longer-term outlook indicates that price pressures would be exhausted by this speculative activity resulting in no further price increases over 2019-2021. Beyond that, normal inflationary pressures are expected to drive prices up modestly.

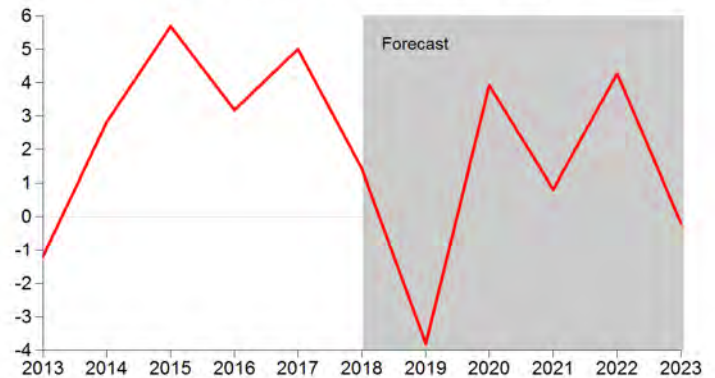
Forecast

Aluminium Product Inflation
(2013 - 2017, Forecast 2018 - 2023; per cent)



Source: Statistics Canada, Corporate Economics

Iron and Steel Product Inflation
(2013 - 2017, Forecast 2018 - 2023; per cent)



Source: Statistics Canada, Corporate Economics

Steel

- ▶ The U.S. economy continues to improve and President Trump has made no secret of his intent to revive America's former industrially based economy. U.S. usage of raw materials continues to increase which has buoyed the price of steel in North America above world averages. Canada barely avoided imposition of dramatic tariffs on steel exports in March, yet renegotiation of NAFTA continues to stand as a significant risk to Canadian steel production.
- ▶ Our base case forecast presumes some continued shrinkage of steel production that mirrors the 3 per cent decline from 2015 to 2016 with an increasing exposure to U.S. concentration of North American steel markets. Prices over the next 3 years are now expected to be buoyed by U.S. imposition of steel tariffs on non-North American exporters. Beyond the next 3 years, we anticipate more moderate price increases until 2021, the expected date of the next U.S. business cycle downturn.

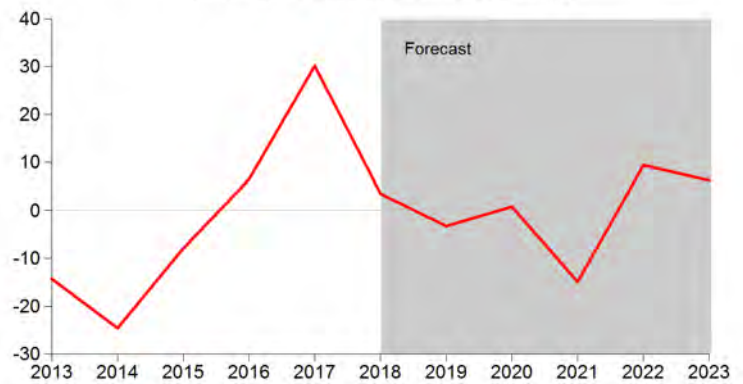
Rubber

- ▶ There are two sources of rubber; natural rubber which is at risk to weather and localized political events and; artificial rubber, which is manufactured with oil and natural gas. Most rubber is used in the manufacture of automotive tires so oil prices, weather events, the general global economy, changes in use of personal vehicles, international trade in oil and natural gas, and the value of the

Canadian dollar, all impact the price of rubber in Canada.

- ▶ The Canadian dollar has fallen faster than we originally anticipated with the result that rubber price increases we anticipated to happen over 2 years occurred in one year. Our expectation for future demand to push prices up in 2019 is now muted due to international trade disputes. We now expect there would be no pent-up demand for rubber products by 2019.
- ▶ The strengthening U.S. economy has boosted global demand for rubber products recently. However, pending trade issues are putting a pause on future growth in demand for rubber products. It appears that rubber demand may have already peaked and we now anticipate the next downswing in global business cycle would negatively impact rubber prices.

Rubber Price Inflation
(2013 - 2017; Forecast 2018 - 2023; per cent)



Source: Statistics Canada, Corporate Economics

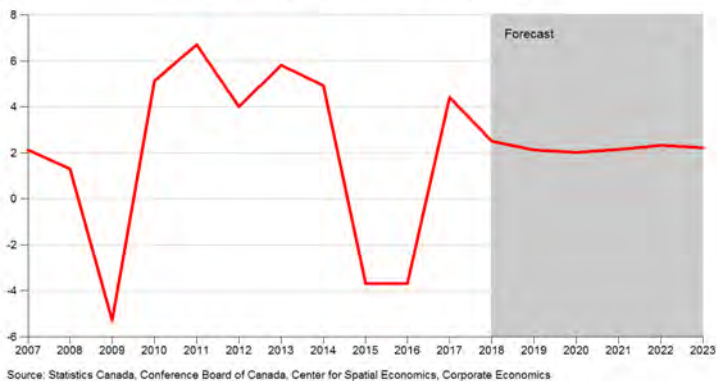
Assumptions

Alberta

Alberta Economic Growth

- ▶ Alberta's economy has somewhat benefited from the recent improvement in crude oil prices, with energy industry providing a lift to overall GDP growth and spreading the momentum to other industries including manufacturing, retail, housing and exports. In 2017, the crude oil rig counts increased by 80 percent over the previous year which led to significant increase in production.
- ▶ The rebuilding of Fort McMurray also boosted residential investment in the province. As a result, economic growth was estimated to be at 4.4 percent in 2017.
- ▶ However, it should be noted that this performance was compared against the low base in 2016, and this pace of growth is not currently sustainable. As the impact of the base year effects from the economic recession and wildfire rebuilding fades, growth should moderate correspondingly. Modest growth should be supported by new capacity in the oil sector and continued improvement in manufacturing and retail sectors.

Alberta: Real Gross Domestic Product Growth Rate
(2007 - 2017, Forecast 2018 - 2023; per cent)



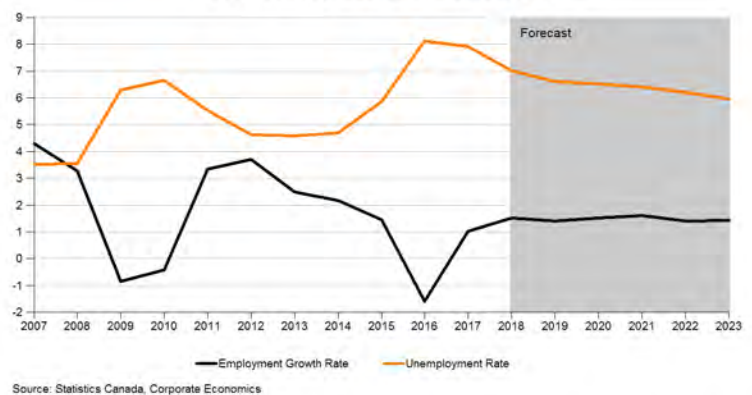
- ▶ The job market in Alberta is projected to be moderate in 2018, with the unemployment rate gradually reducing to below 7 percent by 2019.
- ▶ Overall, the real GDP growth rate in Alberta forecast to average 2.5 percent in 2018 and 2.1 per-

cent in 2019, still relatively robust compared to other provinces across the country. Despite these growth figures, the economic activity in Alberta is not likely to surpass its pre-recession levels until 2019.

Alberta Labour Market

- ▶ The labour market in Alberta has been improving, with increased demand for workers. The energy industry has started seeing employment gains as higher oil prices spur increased exploration and output, as well as improving the fortunes of associated business in sectors like manufacturing, transportation and warehousing. Employment in the public sector continues to increase as well, though the economic benefits of it is limited by continued wage freezes. Increased public sector employment is driven by the demand for infrastructure and public services from the increasing and aging population. Employment growth in the construction sector is expected to remain weak, despite the effort to rebuild Fort McMurray, due to high vacancy rates in both commercial and residential real estate markets.
- ▶ Minimum wage in Alberta is legislated to be \$15 per hour in October 2018, which is going to impact the entry level service industry job market negatively with higher labour costs. Employment growth is expected to be stable at about 1.5 percent throughout the forecast period.

Alberta: Labour Market
(2007 - 2017, Forecast 2018 - 2023; per cent)



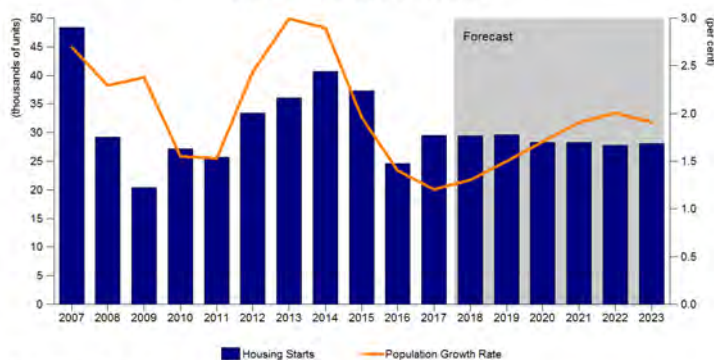
Assumptions

- ▶ The unemployment rate in Alberta declined to 7.8 percent in 2017, from 8.1 percent in 2016. In the next five years, growth in employment is forecast to outpace the growth in labour force. As a result, the unemployment rate should continue to decrease to more historically normal levels. We expect to see the Alberta unemployment rate to dip below 6 percent by 2023.

Housing Starts and Population Growth

- ▶ Housing markets in Alberta have also seen improvements as economic growth spreads across economic sectors. In 2017, total housing starts were 29,500 units in Alberta, up 5,000 from the previous year. Housing starts were supported by efforts to rebuild Fort McMurray, and the increasing housing demand led by the continuing population growth and household formation, as well as the improved labour market.
- ▶ During the economic recession in 2015 and 2016, Alberta experienced reduced net migration as some people moved out of the province for better job opportunities. With the economy and labour market improving, migration levels began to respond positively in Alberta. Interprovincial net migration turned positive in 2017, which, along with continued positive international net migration, bodes well for Alberta’s continued housing market growth.

Alberta: Housing Starts and Population Growth Rate (2007 - 2017, Forecast 2018 - 2023)



Source: Statistics Canada, Alberta Treasury Board and Finance, Corporate Economics

- ▶ However, some of the upward momentum in the Alberta housing market should be offset by the stricter mortgage lending policies and higher bor-

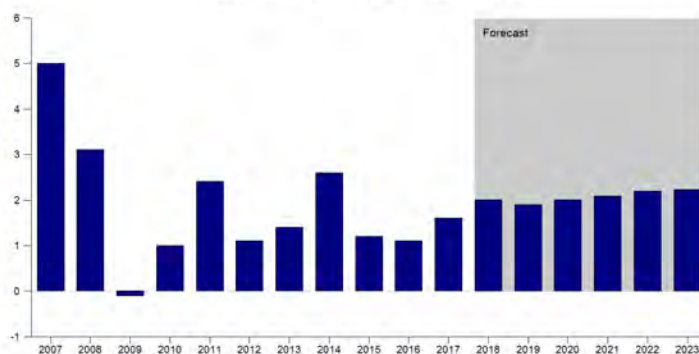
rowing costs as the Bank of Canada is expected to continue raising interest rates.

- ▶ In 2018, the housing market in Alberta is expected to follow a similar trend as its 2017 performance, with the detached sector in more balanced market conditions while the apartment sector continues to struggle with excess inventory. Over the forecast period, housing starts are expected to grow by 28,500 on average every year, with residential investment growth expected to average 1 percent annually.

Alberta CPI Inflation

- ▶ For the past several years, Alberta’s consumer price index (CPI) inflation was subdued by a recession marked with high unemployment. The CPI averaged 1.6 per cent in 2017, and is expected to increase gradually to 2.0 per cent in 2018 as crude oil prices continue to rise and consumer confidence resumes strength.

Alberta: CPI Inflation (2007 - 2017, Forecast 2018 - 2023; per cent)



Source: Statistics Canada, Corporate Economics

- ▶ Alberta’s carbon tax levy has been passed on to consumers since it was launched in January 2017, contributing to the overall CPI inflation in the province. It is expected to continue to drive up the CPI when the tax rates increase again in January 2018.
- ▶ Minimum wage in Alberta has been increased and is scheduled to rise to \$15 per hour by October 2018. The Bank of Canada conducted research which estimates that CPI inflation could be boosted by this minimum wage hike by about 0.1 percent on average in 2018. Consumption would decline because higher inflation would elicit a slight

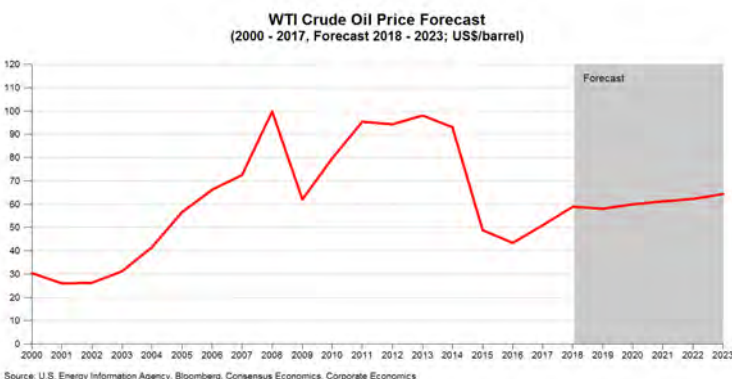
Assumptions

interest rate increase, which would more than offset the higher labour income. This has such a small impact on inflation because there are very few people earning less than \$15 per hour in Alberta today.

- ▶ During the forecast period Alberta CPI inflation is expected to average 2.1 percent.

Crude Oil

- ▶ The past year has seen relatively stable prices of crude oil, with WTI averaging US\$50.8/bbl. in 2017. Both revenues and expenditures improved for the oil industry in 2017.
- ▶ Since late December, WTI has climbed above US\$60/bbl., driven by extreme cold weather in North America, elevated geo-political tensions, and OPEC output restraints which are intended to reduce global excess inventories. Fears of further unrest in Iran and economic collapse in Venezuela have added to the risk of supply disruptions. It is unclear how long crude oil would linger around US\$60/bbl. Sustained high prices could spur U.S. shale production which would quickly translate into higher supply and lower prices.



- ▶ Canadian producers are not benefiting from this price lift compared to their U.S. counterparts. This is a real concern because the largest Canadian producers are subsidiaries of U.S. firms. The price differential between benchmark Canadian and U.S. oil has widened, with a barrel of West Canadian Select crude trading for roughly US\$25 less than WTI due to transportation bottlenecks. Greater pipe-

line capacity is needed, at least until new technology for increased rail transport scales up to meet the challenge.

Natural Gas

- ▶ Alberta natural gas prices continue to remain subdued due to a combination of factors including the high cost of storage, lack of transportation capacity, and erosion of market share. The extremely cold winter weather had created some temporary lift for natural gas prices, but it is not enough to offset the downward pressures on regional pricing in Alberta.



Source: GLJ Energy Publications, Corporate Economics

- ▶ In 2017, the Alberta natural gas prices experienced volatile changes, especially in the summer months when maintenance cut off access to storage facilities. This resulted in higher discrepancies between AECO and Henry Hub prices. 2018 prices is expected to face similar price volatility in the summer months as more maintenance projects have been planned.
- ▶ Alberta's limited ability to access new markets, combined with increased U.S. natural gas production, results in low AECO pricing. As the U.S. continues to expand its transportation infrastructure and export markets, Alberta energy continues to remain landlocked. The benchmark Alberta natural gas price at the AECO hub averaged \$2.3/GJ in 2017, and is expected to only slightly improve in 2018 and 2019, remaining below \$3.5/GJ for the forecasting period.

Textbox 2: Dynamics and Trends of Alberta's Energy Industry

Since 2017, global crude oil market has been rebalancing with relatively stable oil prices. From the supply side, there has been some optimism for the future following the Organization of the Petroleum Exporting Countries' (OPEC) extension of its current production cuts until the end of 2018 and beyond. Rapid declines in Venezuelan crude oil output are also likely to slow the growth of global supply, as well as increase in geo-political tensions in Iran. From the demand side, improved global economic growth expectations have been supporting oil prices. The International Monetary Fund (IMF) forecast that world GDP would grow by slightly higher rates in 2018 and 2019, which should contribute to an increase in crude oil and natural gas consumption. Both supply and demand changes are required to reduce world crude inventories.

Though world oil prices rose recently, the impact on the Western Canadian Select (WCS) benchmark and Alberta producers has been limited. There are two price discounts that WCS has been suffering from; the differential between WTI and Brent, and the differential between WCS and WTI. Over the last year, the gap between WTI and Brent has widened, as Brent prices have grown more than WTI. U.S. shale production increased rapidly which has resulted in transportation constraints and continental oversupply in the North American market. The price differential between WCS and WTI widened even more, with WCS trading for roughly US\$25/bbl. less than WTI. The major cause is the more severe bottleneck constraints in transporting Alberta crude out of the province and south of the border. Market access remains the primary challenge for Alberta's oil and gas industries.

As long as Alberta cannot build much-needed energy infrastructure beyond its borders, crude oil from our province will be priced at a discount to U.S. and world prices. A recent research by TD Economics estimates that the price differential has cost Canada

about \$117 billion in the past seven years. Scotiabank also estimates that delayed oil pipeline construction will cost the Canadian economy \$10.7 billion in 2018, or about 0.5 percent of GDP. Greater pipeline capacity would help ease the price gap in the longer term, but the three major projects, TransCanada's Keystone XL, Enbridge's Line 3 Replacement and Kinder Morgan's Trans Mountain Expansion, still face strong oppositions from U.S. and B.C. governments. Increased Alberta energy production is landlocked with huge difficulties either transporting to the west or to the south. Alberta exports will begin to reach pipeline capacity limits by 2021 based on the forecast by the Alberta Energy Regulator. With the addition of the new pipelines, the transportation capacity in Alberta would be improved significantly. However, if these pipelines are delayed or not developed, oil and gas exports will have to depend more on rail transportation which will add extra transportation costs to Alberta energy products.

Meanwhile, the U.S. has started its transformation from a net importer towards an exporter for energy products, fueled by the booming shale production. As the top destination for U.S. crude exports, China has been increasing its purchases of U.S. light sweet crude oil, especially with OPEC still restraining its output. In 2017, the U.S. crude oil exports to Asia accounted for approximately 33 percent of its overall crude oil export volumes. According to the International Energy Agency (IEA)'s most recent World Energy Outlook, the U.S. is destined to become a net oil exporter within 10 years due to the shale revolution in North America, for the first time since the 1950s. Technological developments in drilling and fracking since the beginning of this century have unlocked huge reserves of natural gas and oil in shale, and reshaped the energy landscape. Rig counts in the U.S. have risen in the past several years, leading to near-record oil production rates in 2017. Currently, shale oil plays represent almost half of U.S. crude oil production,



Assumptions

with the development in the Permian and Eagle Ford basins leading the way. U.S. energy production has also benefited from recent tax reform, making it more attractive for business investment with explosive growth opportunities. This compares strikingly to the modest drilling activities in Canada. Although Alberta drilling levels have stabilized since oil prices collapsed in 2015-16, the outlook remains flat due to the steep price discount Canadian crude faces and weak natural gas prices in Alberta.

In the longer term, with the increased capacity of the U.S. to export light sweet crude oil to the global market, especially the Asian market, we should expect WTI prices to increase. The differential between WTI and Brent should narrow as U.S. exports continue to increase to take advantage of higher prices in the global market. The U.S. remains as a net importer of heavy oil from several major exporters including Canada and some Latin American producers. As other competitors with similar quality of heavy oil such as Mexico and Venezuela continue to decrease their supply to the U.S., the demand for Canadian heavy crude should continue to grow. If Alberta producers can increase their market share and access to the U.S. heavy oil refining industry, the price differential between WTI and WCS should moderate with the improvement in demand for Alberta heavy crude. Alternatively, there continues to be talk of upgrading heavy oil in Alberta and exporting more refined products at higher margins. If successful, that would bump up prices for both domestic oil and natural gas.

The longer-term outlook for Alberta natural gas is mixed with uncertainties too. The Canadian natural gas delivery system was built, to a large extent, to supply U.S. car manufacturers in Michigan with natural gas. Most of those plants moved to the southern U.S. and Mexico, and it does not look like they will return to Michigan anytime soon. Currently, the only international market growth opportunity is coming from Asia. The Chinese demand for natural gas has stayed strong and is expected to be stronger in the forecasting period. The Chinese government is moving quickly to increase the amount of natural gas in

the country's energy composition. This will help to absorb some of the global LNG supplies faster than expected and will bring liquefied natural gas (LNG) back to balance around 2020. The Canadian LNG market should get a lift from the growth of Asian demand, with LNG projects in B.C. specifically boosted due to its closer access to the Chinese market. However, it is uncertain how much Alberta natural gas industry will benefit given the deliverability difficulties to reach Asian markets either through B.C. or the U.S.

There has been some optimism about Canadian shale production, fueled by growing activities in Duvernay and Montney formations located in the Western Canadian sedimentary basin, which are believed by some to be comparable to the most prolific U.S. shale reserves. Like the U.S., Canada also has low population density in regions that contain shale reserves and relatively abundant water resources which are necessary for shale production. Canadian capital markets and infrastructure have more in similarity with the U.S. compared to other countries with shale reserves such as China, Russia and Argentina. Before the crude oil price crash and recession started, most of the investment activity was focused on oil sands. With oil sands projects being shelved some financial resources have been freed up and the shale technology is now more mature. Developing Duvernay and Montney formations may now be more economical.

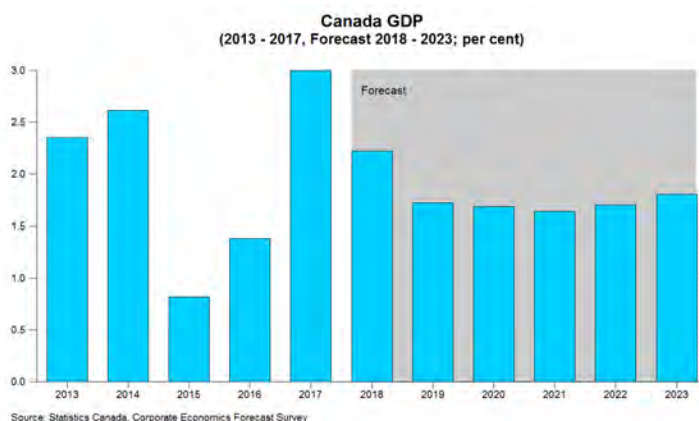
However, we should stay cautious given that shale production will face many of the same challenges in terms of market access as oil sands production. Weak prices in an oversupplied energy market will hamper development, along with the added costs of transportation from remote fields and limited pipeline capacity. These difficulties will have a negative impact on the competition for Alberta producers against their U.S. counterparts.

Assumptions

Canada

Real GDP Growth

- ▶ Real GDP in Canada grew at an exceptional rate of 3 per cent in 2017, the fastest pace since 2011 and ranked number one in the G7 for growth. This was helped by dramatic increases in business investment particularly in the Toronto housing market, as well as a stronger performing oil industry. However, high household debt-to-income ratio in a rising interest rate environment and tougher mortgage rules started to put a limit on consumer spending and home purchases. GDP growth decelerated from 4.2 per cent in the first half of 2017 to 1.6 per cent in the second half of the year.
- ▶ Government spending is expected to have little or no contribution to future growth, as the federal and provincial governments are either rebalancing their budgets or constrained in spending by their fiscal capacities.
- ▶ GDP growth in Canada is expected to decelerate to a more sustainable level at 2.2 per cent in 2018, and average 1.8 per cent from 2019 to 2023. Canada should continue to benefit from growth in the U.S. and the rest of the world, even with market access problems in the energy sector, presuming there are no major trade disruptions from NAFTA renegotiations.



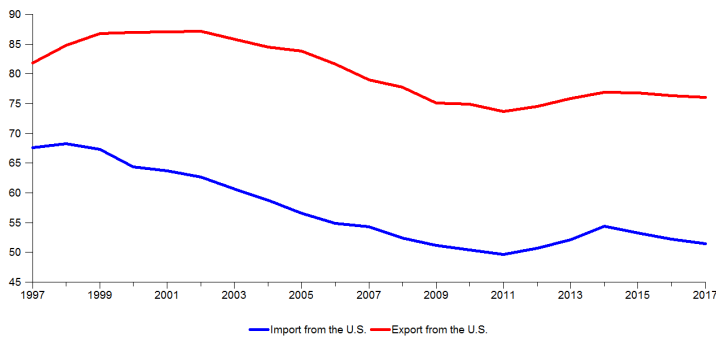
Risks to the Growth Outlook

- ▶ There are two big downside risks to the outlook for Canadian economic growth that are external: 1) the possible dissolution of the North American Free Trade Agreement (NAFTA), and; 2) the impact of the recent U.S. federal tax reforms on the Canadian economy.
- ▶ As a small open economy, Canada depends on international trade for growth. In 2017, exports to other countries accounted for 32 per cent of Canada's real GDP. Among the \$546 billion total goods and services exported from Canada, \$415 billion or 76 per cent of them went to the U.S. In the meantime, Canada imported \$288 billion or 51 per cent of its total \$561 billion in goods and services from the U.S. Although the share of Canada's trade with the U.S. has declined gradually over the past twenty years, Canada's trade relationship with the U.S. is still very important for both countries and is susceptible to trade disruptions such as NAFTA dissolution.
- ▶ For example, a recent announcement by President Trump in March to impose tariffs of 25 per cent on imported steel and 10 per cent on aluminum could have opened the door for a trade war between the U.S. and other countries, including Canada. Canada is currently the largest exporter of steel to the U.S. If the steel tariff is any indicator, a worse-case scenario in NAFTA resolution could see Canada's economy grow slower, or even slip into recession in the next five years.
- ▶ In the past fifteen years, Canada's tax cuts by the federal and provincial governments created business tax advantages for businesses investing in the country, especially compared to the U.S. Foreign companies looking to invest in North America landed in Canada first to take advantage of Canada's low business tax rates and later expanded into the U.S. and Mexico markets through NAFTA.

Assumptions

- ▶ In 2018 the landscape shifted. The U.S. lowered its taxes on businesses. The loss of tax advantages in Canada combined with growing NAFTA uncertainties increased the likelihood of a slow bleed of investment from Canada to the U.S.

Canada: Share of Canada/U.S. Trade Values in Canada's Total International Trade (1997 - 2017; per cent)

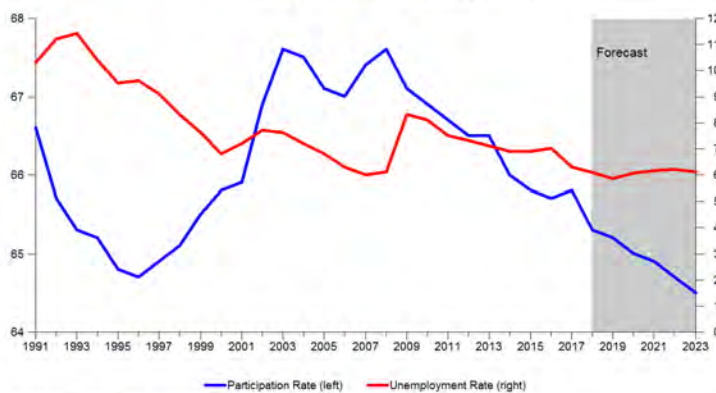


Source: Statistics Canada, Corporate Economics

Labour Market

- ▶ The Canadian economy created 319,000 jobs in 2017, the largest gain since 2008. The country's annual average unemployment rate fell to 6.4 per cent last year and is expected to remain low during the forecast period, reaching 6.1 per cent in 2023.
- ▶ The main reason for Canada's low unemployment rate is the declining labour force participation rate from an aging work force. As baby boomers enter their prime retirement ages (55-64 years old), the participation rate in Canada is expected to decline from 66 per cent in 2017 to 64 per cent in 2023.

Canada: Unemployment Rate vs. Participation Rate (1991 - 2017, Forecast 2018 - 2023; per cent)

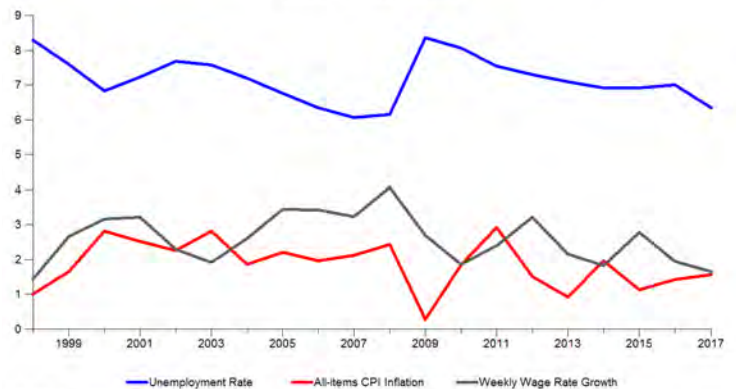


Source: Statistics Canada, Government of Canada, Corporate Economics

Inflation Pressures

- ▶ The Canadian economy is operating close to its capacity. A tight labour market in eastern regions has increased inflationary pressures on wages. New carbon taxes have been applied across the country, while the Ontario and Alberta governments recently raised minimum wages, driving Canada's consumer price inflation up. The headline inflation was 1.6 per cent in 2017, up from 1.4 per cent in 2016 and 1.1 per cent in 2015.
- ▶ With the anticipated low unemployment rate and higher expectations for wage increases over the next few years, inflation in Canada is forecast to reach 1.9 per cent in 2018 and 2.1 per cent in 2019.

Canada: Unemployment Rate and Inflation Pressures (1999 - 2017; per cent)



Source: Statistics Canada, Corporate Economics

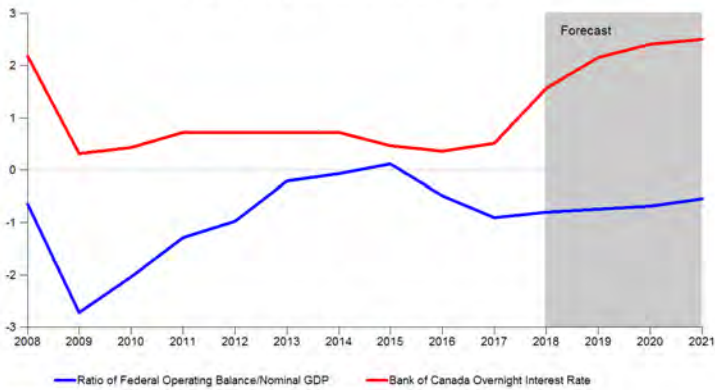
Monetary and Fiscal Policies

- ▶ The Bank of Canada increased its target for the overnight rate to 1 ¼ per cent in January 2018, but skipped another chance to raise rates in March. The Bank is expected to make two more hikes this year, raising the overnight rate to 1 ¾ per cent by the end of 2018. As Canadians have become more indebted, the impact of raising interest rates on the economy has amplified. As a result, the Bank of Canada does not have to raise interest rates as much today as it did 10 years ago to stifle inflation. Interest rates are indeed headed up, but the days of double digit interest rates appear to be relegated to the history books, at least for the foreseeable future.

Assumptions

- ▶ While monetary policy is tightening, fiscal policy in Canada is still accommodative. The federal government is running deficits to help grow the Canadian economy but cautiously doing so. Currently, Canada's net debt-to-GDP ratio is the lowest in the G7. The significant financial assets held by the Canadian federal government gives them the fiscal capacity to deal with future economic shocks.

Canada: Monetary and Fiscal Policy Stance
(2008 - 2017, Forecast 2018 - 2021; per cent)



Source: Statistics Canada, 2018 Federal Budget, Corporate Economics

Textbox 3: The Impact of the U.S. Tax Reform on Canadian Economy

1. What is the U.S. tax reform?

The U.S. Congress in December 2017 passed the long debated and negotiated Tax Cuts and Jobs Act (TCJA) bill, which provided major fiscal stimulus in taxation effective January 1, 2018. Included in the complex TCJA are some individual tax cuts that will expire by the end of 2025. On the other hand, there are various corporate tax cuts, most of them permanent. Among those changes, the most important ones include: the reduction in the statutory corporate tax rate from 35 per cent to 21 per cent, the ability to fully expense equipment spending over 5 years, a cap on interest expense deductions, a tax on un-repatriated foreign earnings, and a transition moving the U.S. from a worldwide taxation system to a territorial one.

TCJA is one of the largest tax cuts since 1969, with the exception of 1981. Historically, the highest fiscal stimulus effects from tax cuts are found in the times during or after recessions. Since the U.S. economy is currently operating at its full capacity and the output gap has disappeared, there are no cyclical reasons for tax cuts. Also, previous tax cuts happened when the U.S. debt to GDP ratios were less than 40 per cent. Currently, the debt to GDP ratio was 104 per cent as of Q3 2017. It is unusual to cut taxes with such a high debt to GDP ratio. What is more unusual this time is that the federal budget deficits were growing instead of declining during the late stage of the current business cycle. As a result, with an estimated cost of \$1.5 trillion over ten years TCJA will probably not pay for itself, which has drawn criticism from fiscal conservatives in the U.S.

However, everyone agrees that the main benefits to the U.S. economy from TCJA are to improve U.S. competitiveness globally by reducing U.S. marginal effective tax rates (METR)⁴ on new projects. Also, with the

4 The METR is equal to corporate income taxes, sales taxes on capital purchases, capital taxes and transfer taxes paid as a percentage of the gross rate of return on capital for the marginal project that earns sufficient profits to cover costs to obtain financing from bond and stock owners.

transition from a worldwide to a territorial tax system, TCJA was designed to encourage U.S. businesses to invest domestically.

2. What are the risks and impacts of TCIA on Canadian and Alberta Economy?

As America's northern neighbor and largest trading partner, Canada has been closely watching the tax reforms in the U.S. Since the passage of TCIA, economists and policy analysts in Canada have raised their concerns about the impacts of TCIA on Canada's economy.

Tax data collected by the OECD shows that from 2000 to 2017 business tax cuts in Canada have made Canada more competitive than the U.S. in terms of tax advantages. The combined statutory corporate income tax rate⁵ including central and sub-central governments in Canada declined from 42.4 per cent in 2000 to 38 per cent in 2002 and 26.7 per cent in 2017. Over the same time, the U.S. combined tax rate was almost unchanged, ranging from 39.3 per cent in 2000 to 38.9 per cent in 2017.

Similar tax advantages were found with small business taxes in Canada. The combined central and sub-central government small business corporate rate in Canada dropped from 20 per cent in 2000 to 14.5 per cent in 2017. Over the same period, the comparable tax rate stayed almost the same in the U.S., from 20.3 per cent to 19.8 per cent.

With TCJA, Canada lost its business tax advantages to the U.S. by the benchmark of tax rate alone. Adding to this newly found tax disadvantage, Canada also faces the possibility of corporate tax base erosion as companies operating in North America might move profits to the U.S.

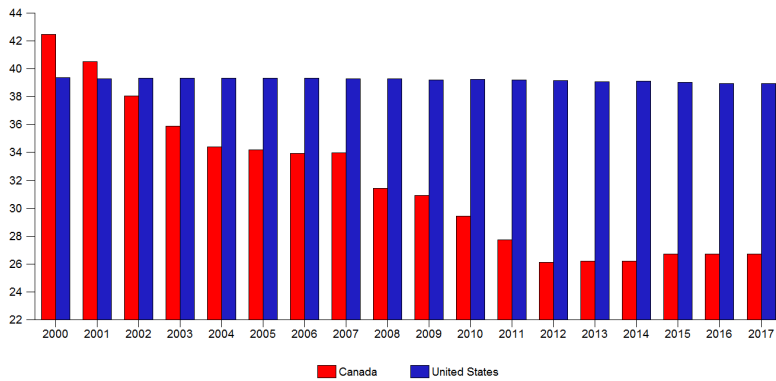
The Canadian Government has realized the potential

5 OECD data for combined (statutory) corporate income tax rates are the legally imposed tax rates collected for countries. Where a progressive (as opposed to flat) rate structure applies, the top marginal rate is shown.

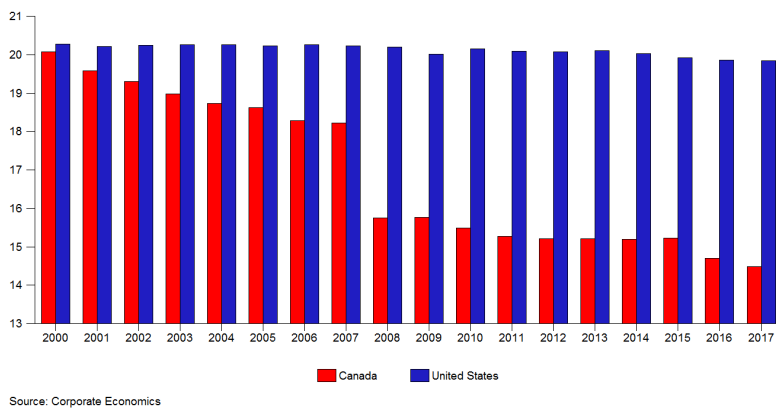
Assumptions

impacts from TCIA on Canadian economy. In its 2018 Budget, the federal government announced that “over the coming months, the Department of Finance Canada will conduct detailed analysis of the U.S. federal tax reforms to assess any potential impacts on Canada.” This is a good start for the government to come up with strategies to help Canadian businesses competing in the world market with a competitive taxation system.

Combined Central and Sub-central Government Corporate Income Tax Rate (2000 - 2017; per cent)



Combined Central and Sub-central Government Small Business Corporate Income Tax Rate (2000 - 2017; per cent)



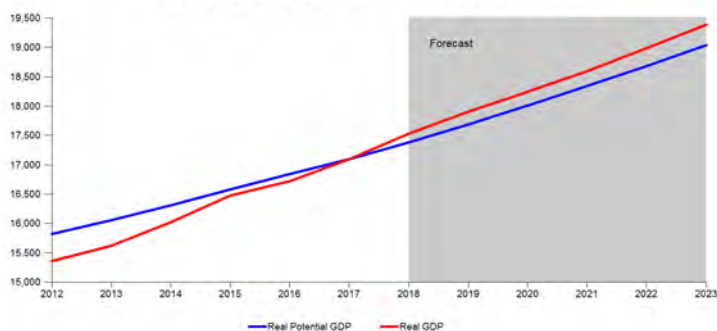
Assumptions

United States

Real GDP Growth Above Potential

- ▶ The U.S. economy grew by 2.3 per cent last year and has been operating above its real potential GDP since Q3 2017. The country's civilian unemployment rate dropped to 4.4 per cent in 2017, the lowest level in seventeen years. The U.S. consumer price inflation, after staying low for many years, increased to 2.1 per cent in 2017 driven by wage increases from tight labour markets across the country.
- ▶ The U.S. economy has built up considerable momentum. It is expected to grow at 2.5 per cent this year, and average 2 per cent during the next five years. As the capacity gap has closed last year, the economy is expected to operate above its real potential level for the next few years. Last time this happened was between Q2 1997 and Q4 2000, which lasted for fifteen consecutive quarters.

U.S.: Real GDP vs. Real Potential GDP
(2012 - 2017, Forecast 2018 - 2023; billions of chained 2009-dollars)



Source: U.S. Congressional Budget Office, retrieved from Federal Reserve Bank of St. Louis, Corporate Economics

- ▶ Currently the biggest challenge to U.S. economic growth is the shortage of labour. With the unemployment rate reaching 4.1 per cent in January 2018, employers are facing difficulties finding skilled and unskilled workers. The latest data shows total unfilled job vacancies in the U.S. reached a record high of 6.2 million in September 2017. In the meantime, there were 6.7 million people unemployed due to the mismatch of the skills they could provide and the skills the employers needed.
- ▶ The inflation-free, long-term natural rate of unemployment in the U.S. was 4.7 per cent in 2017. In

the recent months, however, the U.S. unemployment rate dropped to levels below that threshold and the situation is expected to continue during the forecast period. The low unemployment rate will certainly raise wage hike expectations, adding upward pressures on consumer prices.

U.S.: Unemployment Rate vs. CPI Inflation
(2007 - 2017; per cent)

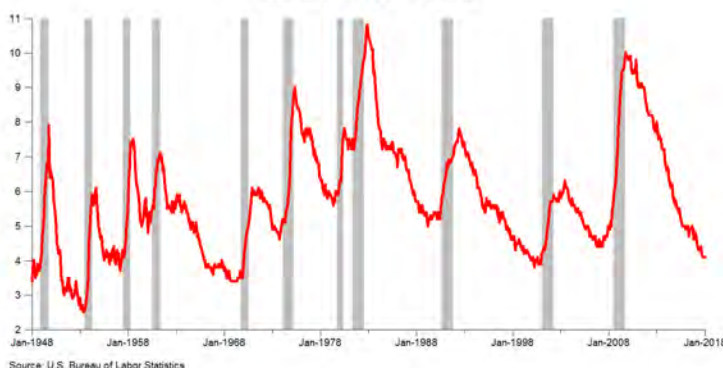


Source: U.S. Congressional Budget Office, retrieved from Federal Reserve Bank of St. Louis, Corporate Economics

Economy Entering Late Stage of Business Cycle

- ▶ The U.S. economy grew for the 34th consecutive quarter by Q4 2017, making this the third longest expansion on record. Of course, it has been recovering from the global financial crisis since 2008 so it has taken a rather long time to return to more normal economic activity levels since then. Currently, all economic fundamentals are sound in the U.S. The effect of automation and e-commerce has so far helped to offset inflationary pressures from a tight labour market and kept inflation under control. As the expansion is entering the late stage of the current business cycle, however, risks of recession are increasing.

U.S. Civilian Unemployment Rate
(Jan. 1948 - Jan. 2018; per cent)



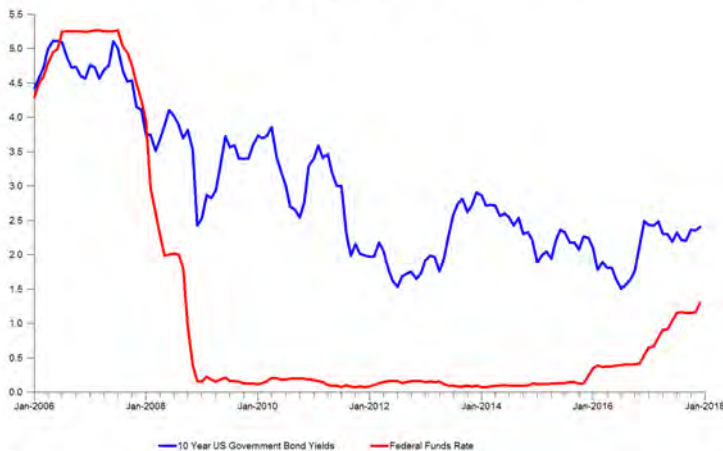
Source: U.S. Bureau of Labor Statistics

Assumptions

Monetary and Fiscal Policies

- ▶ Consumer prices in the U.S. are on the rise, driven by rising labour costs and firming energy prices. As a result, the Federal Reserve is tightening the monetary policy with three expected rate hikes and announced a plan to shrink its balance sheet in 2018 by over \$400 billion.
- ▶ In an expansionary move, the federal government passed the tax reform bills which provided sizeable fiscal stimulus to the already hot U.S. economy. The upside of the U.S. stimulus to Canadian economy would be increased demand for Canadian exports. On the downside though, Canadian consumers and producers alike could face higher prices due to competitions for capital, labour and materials in North America.

U.S.: Short-term vs. Long-term Interest Rates
(Jan. 2006 - Jan. 2018; per cent)



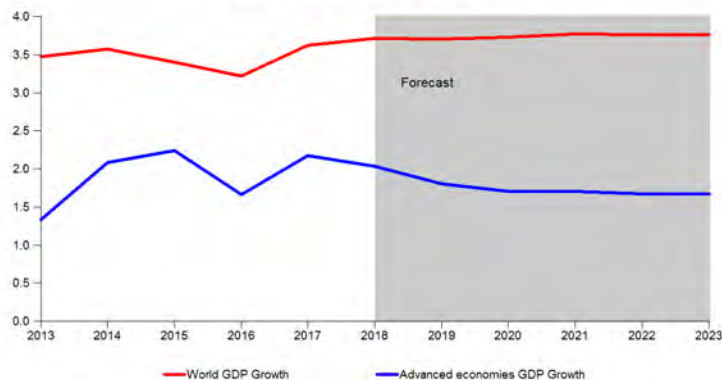
Source: U.S. Congressional Budget Office, retrieved from Federal Reserve Bank of St. Louis, Corporate Economics

Assumptions

World

- ▶ The world outlook has changed from our last assumptions in the fall 2017.
- ▶ The economic landscape across the globe has changed fundamentally. The United States has “called out” China by imposing tariffs on over 60 billion dollars worth of trade. China has signaled retaliation by imposing tariffs on 30 billion dollars worth of U.S. Imports.
- ▶ However, the United States has signaled protectionist behavior by:
 - pulling out of the Trans-Pacific Partnership (TPP) in 2017
 - threatening to pull out from NAFTA, and
 - imposing a 25 per cent tariff on Steel and 10 per cent on Aluminum for some trading partners.
- ▶ These signals have significant global implications going forward. The upcoming November elections in the United States, for both the house of representatives and the senate, will either bolster or weaken the United States president’s positions on Trade. However, it would be premature to conclude a trade war will break out, given that this may cause a global recession. But, we do not minimize the looming trade issues emanating out of the United States, and have noted the downside risks in our forecast risks.
- ▶ The exit of the United Kingdom from the European Union continues to progress. The Grexit saga is still ongoing, but there is no strong desire for Greece to exit the European Union.
- ▶ The advanced economies are expected to grow below 2 per cent within the forecast period except in 2018 when growth is estimated at 2 per cent. Growth is expected to average 1.8 per cent across the forecast period. This is below the world growth rate of 3.7 per cent average within the forecast period.

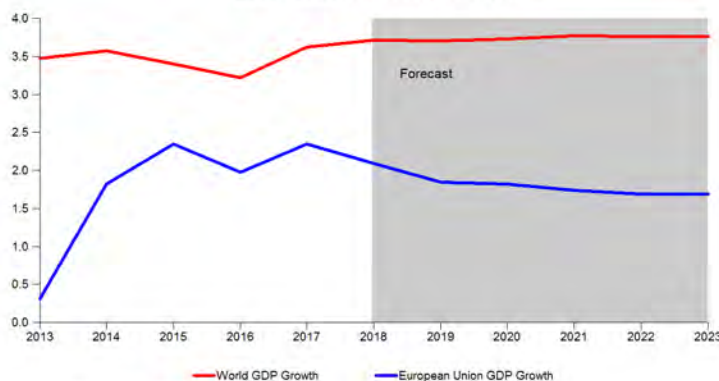
World and Advanced Economies GDP Growth Rate (2013 - 2017, Forecast 2018 - 2023)



Source: Statistics Canada, Corporate Economics

- ▶ The European Union is also expected to mimic the growth rate of advanced economies averaging 1.8 per cent over the forecast period, with an estimate of 2.1 per cent growth in 2018.

World and European Union GDP Growth Rate (2013 - 2017, Forecast 2018 - 2023)

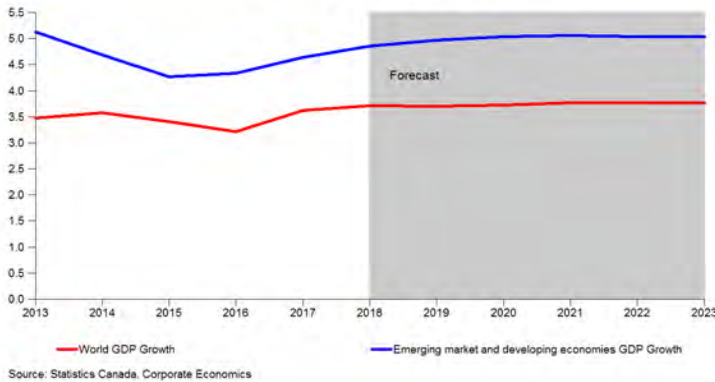


Source: Statistics Canada, Corporate Economics

- ▶ World growth is spear headed by growth from the emerging markets and developing economies with average growth rate of 5 per cent in the forecast period, and an estimated growth rate of 4.8 per cent in 2018. Growth in The Middle East, North Africa, Afghanistan, and Pakistan is expected to average 3.6 per cent within the forecast period.

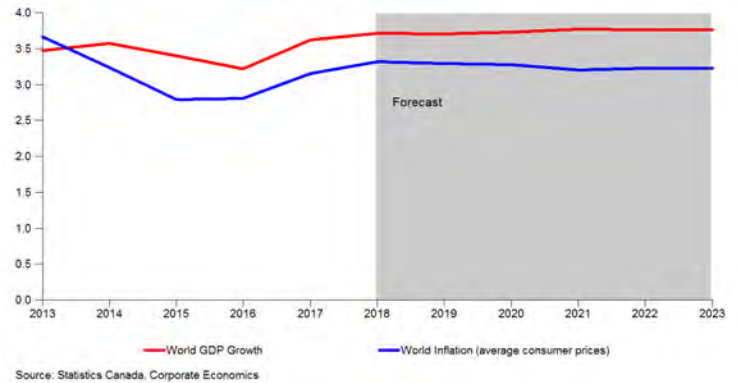
Assumptions

World and Emerging Market and Developing Economies GDP Growth Rate (2013 - 2017, Forecast 2018 - 2023)

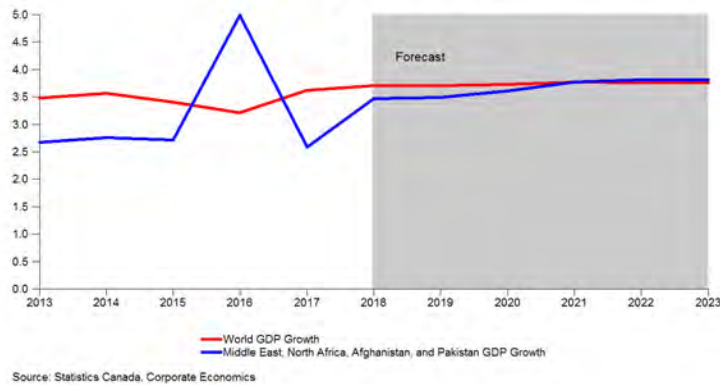


► The growth increase in 2018 from emerging and developing economies in the Middle East, North Africa, Afghanistan, and Pakistan and Sub-Sahara aided in the increase in world inflation in 2018 to 3.3 per cent. The expected growth across the forecast period will keep average inflation at 3.3 per cent between 2018 and 2023.

World Gross Domestic Product Growth and Inflation (2013 - 2017, Forecast 2018 - 2023)

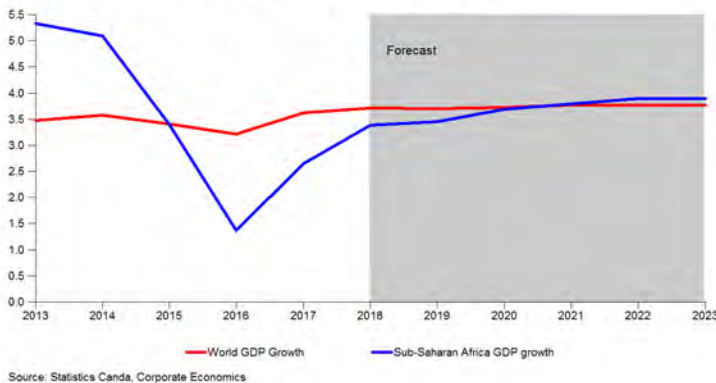


World and Middle East, North Africa, Afghanistan, and Pakistan GDP Growth Rate (2013 - 2017, Forecast 2018 - 2023)



► Sub-Sahara Africa is expected to grow at an average of 3.6 per cent within the forecast period, with 3.4 per cent growth in 2018, lending a boost to global world growth.

World and Sub-Saharan Africa GDP Growth Rate (2013 - 2017, Forecast 2018 - 2023)



Textbox 4: North American Free Trade Agreement

The economies of the world are connected through political and trade blocks, international trade, financial markets and migration of their citizens across the globe. And therefore, any change in policies can impact other countries through these channels.

The Canada-United States Free Trade Agreement (CUSFTA) came into force on January 1, 1989. It was to eliminate existing tariffs between the two countries within 10 years. In January 1, 1994, the North American Free Trade Agreement (NAFTA) - a trilateral Free Trade Agreement between Canada, United States and Mexico - was enforced, superseding CUSFTA. NAFTA was to enhance CUSFTA and provide a broader access to each other's markets and foster competition and greater economic growth. There is no doubt that United States, Canada and Mexico have benefited from opening their markets to each other. We highlight the balance of trade between Canada and the United States between 1988 and 2017 across 21 categories of products and services to shed light on benefits of trade between these two neighbors. We also highlight the trading balance between Alberta and the United States and discuss the implications of the uncertainty surrounding economic growth in the Alberta economy and by extension Calgary.

In 1988 prior to the CUFTA, Canada had a trade deficit with the United States in 9 out of 21 aggregated product categories. A year after NAFTA came into force, Canada had 8 trade product categories which had a deficit in the balance of trade with the U.S.

In 2017, the same categories remained in deficit except Vegetable products which now had a positive balance of trade and Prepared foodstuffs; beverages, spirits and vinegar; tobacco and manufactures tobacco substitutes which previously had a balance of

trade surplus now had a balance of trade deficit.

The Tables and Charts for Canada and Alberta show the categories of products with the greatest vulnerability, based on the absolute size of shares in 2017. The product categories which will be significantly impacted given disruption in NAFTA are; Mineral products, Base metals and articles of base metal, Wood and articles of wood; wood charcoal; cork and articles of cork; manufactures of straw, of esparto or of other plaiting materials; basketware and wickerwork, and Vehicles, aircraft, vessels and associated transport equipment.

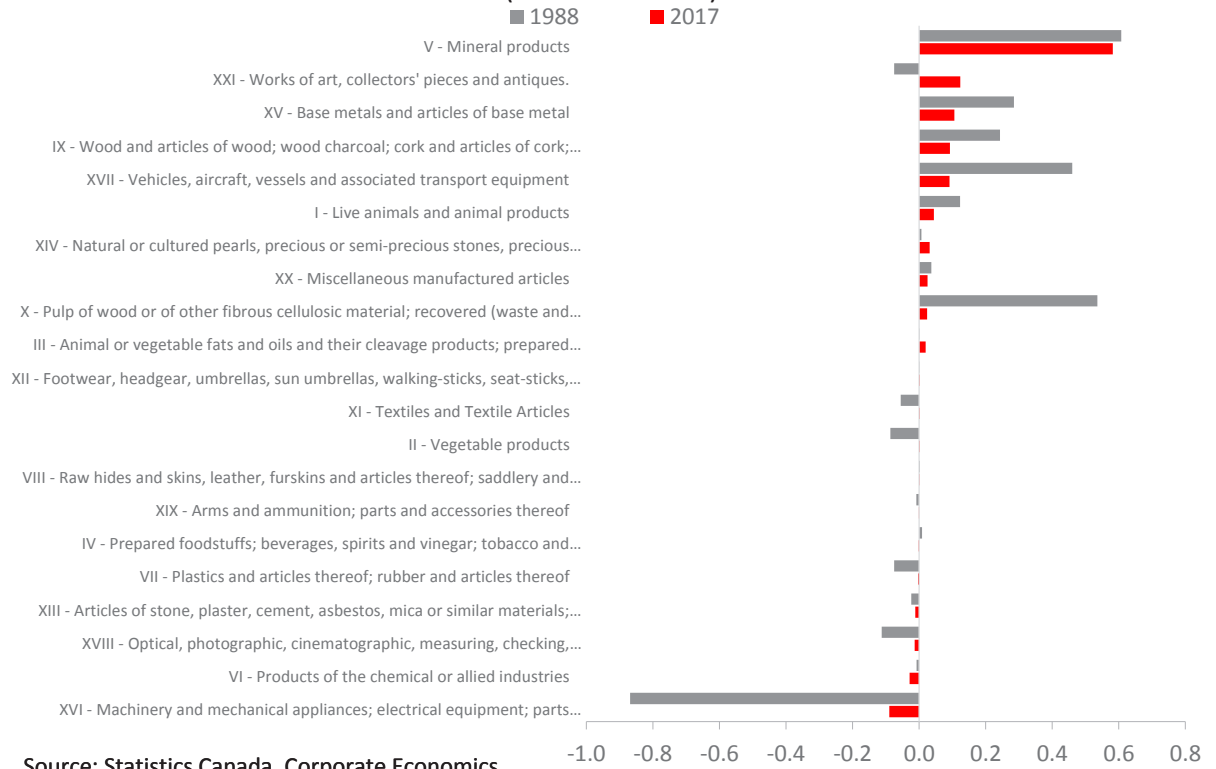
The balance of trade shares for Alberta show that prior to CUSFTA, there were 13 product categories with trade deficits and 13 categories in 2017. And the greatest product vulnerabilities are in Mineral products, Plastics and articles thereof; rubber and articles thereof, Live animals and animal products and Vehicles, aircraft, vessels and associated transport equipment. Therefore, as the uncertainty around NAFTA lingers, industries which are associated with the above product categories are likely to experience increased uncertainty and this will slow down potential investment. Clearly, oil and gas, and agricultural product related goods and services are examples of industries which will face a greater degree of anxiety which is never conducive for investment. Likewise, industries which are connected to the supply chain of these sectors will also be affected.

The uncertainty of the future of NAFTA may linger until the 2018 senate and house elections in The United States are completed, which could push NAFTA negotiations into 2019. What is certain is that Alberta will need to open new routes to export its energy resources via tide water if the oil and gas sector is to remain competitive.

For more information, please refer to the following pages 34-37.

Canada - U.S. Balance of Trade: 1988 vs. 2017

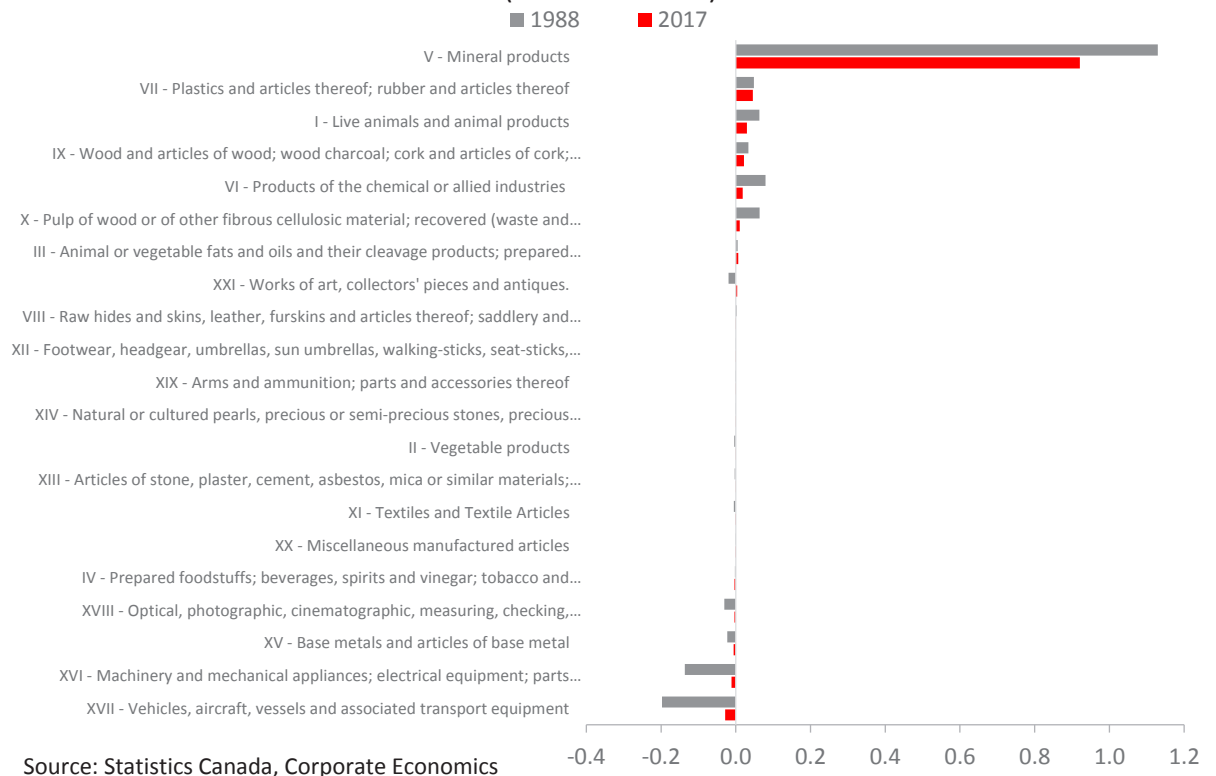
(Shares of trade)



Source: Statistics Canada, Corporate Economics

Alberta - U.S. Balance of Trade: 1988 vs. 2017

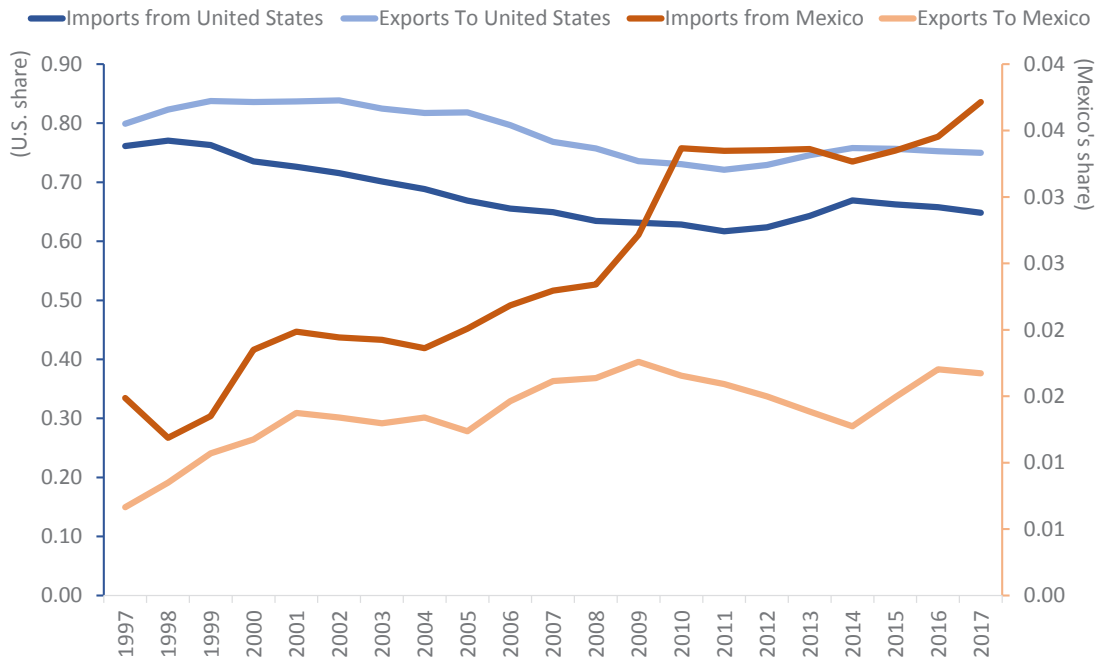
(Shares of trade)



Source: Statistics Canada, Corporate Economics

Assumptions

Canada's Share of Exports to and Imports from United States and Mexico (1997 - 2017)



Source: Statistics Canada, Corporate Economics

Assumptions

Textbox 4 Canada's Merchandise Trade Total

	1988	1990	1993	1995	2000	2017
Balance of Trade in Canadian Dollars (Billions)	95.3	23.7	36.8	57.1	129.6	310.3

	1988	1990	1993	1995	2000	2017
I - Live animals and animal products.	0.12	0.09	0.07	0.05	0.04	0.04
II - Vegetable products	-0.09	-0.05	-0.03	-0.02	-0.01	0.00
III - Animal or vegetable fats and oils and their cleavage products; prepared edible fats; animal or vegetable waxes.	0.00	0.00	0.00	0.00	0.00	0.02
IV - Prepared foodstuffs; beverages, spirits and vinegar; tobacco and manufactures tobacco substitutes.	0.01	0.00	0.02	0.00	0.01	0.00
V - Mineral products	0.61	0.45	0.44	0.35	0.38	0.58
VI - Products of the chemical or allied industries.	-0.01	-0.04	-0.05	-0.03	-0.04	-0.03
VII - Plastics and articles thereof; rubber and articles thereof.	-0.07	-0.05	-0.03	-0.01	0.00	0.00
VIII - Raw hides and skins, leather, fur-skins and articles thereof; saddlery and harness; travel goods, handbags and similar containers; articles of animal gut (other than silk-worm gut).	0.00	0.00	0.00	0.00	0.00	0.00
IX - Wood and articles of wood; wood charcoal; cork and articles of cork; manufactures of straw, of esparto or of other plaiting materials; basket-ware and wickerwork.	0.24	0.14	0.19	0.15	0.11	0.09
X - Pulp of wood or of other fibrous cellulosic material; recovered (waste and scrap) paper or paperboard.	0.54	0.32	0.18	0.20	0.10	0.02
XI - Textiles and Textile Articles	-0.06	-0.04	-0.03	-0.02	0.01	0.00
XII - Footwear, headgear, umbrellas, sun umbrellas, walking-sticks, seat-sticks, whips, riding-crops and parts thereof; prepared feathers and articles made therewith; artificial flowers; articles of human hair.	0.00	0.00	0.00	0.00	0.00	0.00
XIII - Articles of stone, plaster, cement, asbestos, mica or similar materials; ceramic products; glass and glassware.	-0.02	-0.02	-0.02	-0.01	0.00	-0.01
XIV - Natural or cultured pearls, precious or semi-precious stones, precious metals, metals clad with precious metal and articles thereof; imitation jewelry; coin.	0.01	0.00	0.03	0.03	0.03	0.03
XV - Base metals and articles of base metal	0.28	0.11	0.09	0.10	0.03	0.11
XVI - Machinery and mechanical appliances; electrical equipment; parts thereof; sound recorders and reproducers, television image and sound recorders and reproducers, and parts and accessories of such articles.	-0.87	-0.50	-0.40	-0.29	-0.11	-0.09
XVII - Vehicles, aircraft, vessels and associated transport equipment.	0.46	0.50	0.49	0.39	0.31	0.09
XVIII - Optical, photographic, cinematographic, measuring, checking, precision, medical or surgical instruments and apparatus; clocks and watches; musical instruments; parts and accessories thereof.	-0.11	-0.09	-0.07	-0.06	-0.03	-0.01
XIX - Arms and ammunition; parts and accessories thereof.	-0.01	-0.01	-0.01	0.00	0.00	0.00
XX - Miscellaneous manufactured articles	0.04	0.01	0.00	0.02	0.03	0.03
XXI - Works of art, collectors' pieces and antiques.	-0.07	0.16	0.12	0.13	0.15	0.12

Assumptions

Textbox 4 Alberta's Total Merchandise Trade

Alberta Exports and Imports to United States, Shares	Exports US 1988	Imports US 1988	Exports US 2017	Imports US 2017
Total merchandise trade	0.69	0.84	0.88	0.66
I - Live animals and animal products.	0.86	0.91	0.68	0.66
II - Vegetable products	0.06	0.79	0.16	0.64
III - Animal or vegetable fats and oils and their cleavage products; prepared edible fats; animal or vegetable waxes.	0.44	0.75	0.40	0.35
IV - Prepared foodstuffs; beverages, spirits and vinegar; tobacco and manufactures tobacco substitutes.	0.60	0.46	0.58	0.60
V - Mineral products	0.85	1.00	0.99	0.95
VI - Products of the chemical or allied industries.	0.50	0.77	0.74	0.79
VII - Plastics and articles thereof; rubber and articles thereof.	0.62	0.77	0.90	0.59
VIII - Raw hides and skins, leather, fur-skins and articles thereof; saddlery and harness; travel goods, handbags and similar containers; articles of animal gut (other than silk-worm gut).	0.38	0.44	0.03	0.16
IX - Wood and articles of wood; wood charcoal; cork and articles of cork; manufactures of straw, of esparto or of other plaiting materials; basketware and wickerwork.	0.92	0.92	0.94	0.43
X - Pulp of wood or of other fibrous cellulosic material; recovered (waste and scrap) paper or paperboard.	0.95	0.83	0.51	0.81
XI - Textiles and Textile Articles	0.08	0.59	0.77	0.24
XII - Footwear, headgear, umbrellas, sun umbrellas, walking-sticks, seat-sticks, whips, riding-crops and parts thereof; prepared feathers and articles made therewith; artificial flowers; articles of human hair.	0.90	0.30	0.70	0.09
XIII - Articles of stone, plaster, cement, asbestos, mica or similar materials; ceramic products; glass and glassware.	0.88	0.62	0.98	0.44
XIV - Natural or cultured pearls, precious or semi-precious stones, precious metals, metals clad with precious metal and articles thereof; imitation jewelry; coin.	0.77	0.36	0.69	0.57
XV - Base metals and articles of base metal	0.74	0.74	0.39	0.45
XVI - Machinery and mechanical appliances; electrical equipment; parts thereof; sound recorders and reproducers, television image and sound recorders and reproducers, and parts and accessories of such articles.	0.59	0.83	0.70	0.47
XVII - Vehicles, aircraft, vessels and associated transport equipment.	0.60	0.98	0.71	0.82
XVIII - Optical, photographic, cinematographic, measuring, checking, precision, medical or surgical instruments and apparatus; clocks and watches; musical instruments; parts and accessories thereof.	0.41	0.82	0.67	0.53
XIX - Arms and ammunition; parts and accessories thereof.	1.00	0.92	1.00	0.72
XX - Miscellaneous manufactured articles	0.83	0.61	0.88	0.32
XXI - Works of art, collectors' pieces and antiques.	0.21	0.69	0.76	0.69





Forecast Tables



Forecast Tables

Table 1 Selected Economic Indicators

						FORECAST					
Forecast completed September 2017	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
ASSUMPTIONS											
Global Economy											
World Real Gross Domestic Product Growth (%)	3.5	3.6	3.4	3.2	3.6	3.7	3.7	3.7	3.8	3.8	3.8
The United States											
U.S. Real Gross Domestic Product Growth (%) (chained 2009 dollar)	1.7	2.6	2.9	1.5	2.3	2.5	2.1	1.9	1.9	2.1	2.1
Canada											
Canada Real Gross Domestic Product Growth (%) (chained 2007 dollar)	2.3	2.6	0.8	1.4	3.0	2.2	1.7	1.7	1.6	1.7	1.8
Prime Business Loan Rate (%)	3.0	3.0	2.8	2.7	2.9	2.8	3.2	3.8	4.3	4.6	4.8
Exchange Rate (US\$ per Cdn\$)	0.97	0.91	0.78	0.76	0.77	0.80	0.81	0.80	0.80	0.80	0.80
Alberta											
Alberta Real Gross Domestic Product Growth (%) (chained 2007 dollar)	5.8	4.9	-3.7	-3.7	4.4	2.5	2.1	2.0	2.1	2.3	2.2
Total Employment Growth (%)	2.5	2.2	1.4	-1.6	1.0	1.5	1.4	1.5	1.6	1.4	1.4
Unemployment Rate (%)	4.6	4.7	5.9	8.1	7.8	7.0	6.6	6.5	6.4	6.2	6.0
Housing Starts ('000 units)	36.0	40.6	37.3	24.5	29.5	29.4	29.6	28.3	28.2	27.7	28.0
Alberta CPI Inflation (%)	1.4	2.6	1.2	1.1	1.6	2.0	1.9	2.0	2.1	2.2	2.2
West Texas Intermediate - WTI (US\$/bbl)	97.9	93.2	48.7	43.3	50.8	58.7	57.9	59.7	61.1	62.1	64.1
Western Canadian Select - WCS (US\$/bbl)	73.5	74.5	35.1	29.5	37.6	40.5	44.0	48.0	51.6	52.5	54.1
Alberta Natural Gas Price - AECO/NIT (C\$/GJ)	3.0	4.3	2.6	2.0	2.3	2.4	2.5	2.9	3.1	3.3	3.5
Industrial Product Price Index (%)	0.4	2.5	-0.8	-0.2	2.9	1.0	2.0	2.0	2.0	2.0	2.1
Raw Materials Price Index (%)	0.9	1.6	-19.9	-4.6	9.0	-1.5	1.7	2.4	2.6	2.7	2.5
Alberta Average Wage Rate Increase for all industries (%)	4.9	4.6	-3.0	-4.1	1.8	3.0	2.7	2.9	2.7	2.7	2.6
FORECAST											
Calgary Economic Region (CER)											
Real Gross Domestic Product Growth (%)*	4.2	5.4	-3.7	-1.2	3.1	2.5	2.0	2.2	2.0	2.1	2.3
Total Employment ('000 persons)**	836.0	855.3	877.5	859.2	882.7	897.5	910.5	926.2	940.2	954.7	971.6
Total Employment Growth (%)**	3.1	2.3	2.6	-2.1	2.7	1.7	1.4	1.7	1.5	1.5	1.8
Unemployment Rate (%)**	4.8	4.9	6.1	9.0	8.6	7.8	7.3	6.6	6.3	5.9	5.3
Calgary Census Metropolitan Area (CCMA)											
Calgary CPI Inflation (%)	1.7	3.0	1.2	1.0	1.7	2.0	2.0	2.0	1.8	2.2	2.3
Non-Residential Building Price Inflation (%)	1.2	1.3	-0.6	-2.6	0.9	2.9	0.2	3.3	1.4	1.7	3.0
Numbers may not add up due to rounding; negative numbers in brackets. * Source: Centre for Spatial Economics, Corporate Economics, International Monetary Fund ** Forecasts for the labour market indicators (e.g. total employment and unemployment) based on Statistics Canada's Labour Force Survey are not comparable with the results of population forecasts based on the federal census, due to methodology and data source differences.											

Forecast Tables

Table 2 Selected Indicators for the City of Calgary

	FORECAST										
Forecast completed March 2018	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Demography											
Total Population ('000 persons)	1,157	1,195	1,231	1,235	1,246	1,259	1,272	1,285	1,303	1,323	1,344
Total Population Growth (%)	3.3	3.3	3.0	0.3	0.9	1.0	1.0	1.1	1.4	1.6	1.6
Net Migration ('000 persons)	26.2	28.0	24.9	-6.5	1.0	1.9	2.8	3.8	8.5	11.4	12.6
Household Formation ('000 units)	8.1	11.1	8.8	7.1	7.5	2.6	4.9	5.0	6.6	7.6	8.0
Real Estate											
Residential Market											
Average Residential MLS® Price Change (%)*	6.8	5.5	-2.9	2.5	2.0	1.4	2.8	3.3	1.2	3.4	3.0
Total Building Permits mid point (\$billions)	6.1	6.3	6.3	4.7	4.5	3.6	3.9	4.3	3.9	4.1	4.1
Office Space Market											
Downtown Office Vacancy Rate (head-lease)**	3.8	5.3	10.0	18.2	21.3	23.3	22.1	20.9	19.7	18.4	16.9
* Source: CREB, Corporate Economics. Negative numbers in brackets. **Source: Altus InSite											

Table 3 Selected Commodity Price Inflation

(Year-over-year percentage change)

	FORECAST										
Forecast completed March 2018	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Commodities											
Construction Commodities											
Iron and steel products	-1.2	2.8	5.7	3.2	5.0	1.4	-3.8	3.9	0.8	4.3	-0.2
Aluminium products	0.1	7.9	7.8	-8.7	6.3	6.8	0.0	0.0	0.0	1.8	0.9
Wood	6.9	3.2	1.6	4.0	4.2	-3.8	-0.1	2.2	1.6	0.1	-0.4
Asphalt*	-5.4	14.5	-9.6	-25.4	8.7	10.2	-6.9	0.1	-0.4	0.0	2.1
Operational Commodities											
Rubber	-14.3	-24.6	-7.9	6.4	30.1	3.5	-3.3	0.8	-15.0	9.4	6.2
Diesel Oil	5.2	7.9	-21.8	-10.2	17.3	7.1	-6.7	4.8	1.5	1.1	2.1
Vehicle Parts	0.1	0.9	2.1	1.3	1.3	-2.0	1.7	1.8	2.3	2.2	1.9
* Based on Ontario Ministry of Transportation Asphalt Price Index											
Numbers may not add up due to rounding; negative numbers in brackets.											

Forecast Tables

Table 4 City of Calgary Population Projections

City of Calgary (thousand persons)	FORECAST									
Completed September 2017	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Total Population (as of April)	1,246.3	1,258.7	1,271.6	1,285.0	1,302.7	1,323.0	1,344.3	1,364.7	1,384.1	1,402.4
Total Population Growth Rate (April - March) %	0.9	1.0	1.0	1.1	1.4	1.6	1.6	1.5	1.4	1.3
Total Net Migration (April - March)	1.0	1.9	2.8	3.8	8.5	11.4	12.6	11.9	11.0	10.2
Total Births (April - March)	16.2	17.5	17.3	17.1	16.8	16.8	16.8	16.8	16.8	16.8
Total Deaths (April - March)	6.0	7.0	7.2	7.5	7.7	7.9	8.1	8.3	8.5	8.7
Total Natural Increase (April - March)	10.2	10.5	10.0	9.6	9.1	8.9	8.7	8.6	8.4	8.1
Total Households (as of April)	471.2	473.8	478.6	483.6	490.3	497.9	506.0	513.7	520.9	527.9
Total Household Formation (April - March)	7.5	2.6	4.9	5.0	6.6	7.6	8.0	7.7	7.3	6.9
Population by 5-year Cohort (thousands)										
0-4	86.4	87.0	87.0	86.7	85.9	85.0	84.2	83.7	83.5	83.5
5-9	78.2	80.0	81.4	82.7	84.2	86.1	86.7	86.7	86.3	85.6
10-14	68.7	70.7	73.1	75.3	77.2	78.6	80.6	82.0	83.3	84.9
15-19	67.5	66.5	66.4	66.9	68.0	69.7	72.1	74.7	77.1	79.1
20-24	78.1	75.5	73.5	72.0	71.8	72.1	72.8	73.8	74.8	75.8
25-29	100.3	96.6	93.3	89.6	87.2	86.9	87.5	87.9	88.1	88.2
30-34	114.1	112.9	110.8	108.7	108.0	107.2	106.4	105.7	104.4	102.7
35-39	109.8	112.1	114.6	116.8	118.8	119.8	121.0	120.9	120.5	120.2
40-44	98.9	100.3	102.3	105.2	108.8	113.4	117.3	121.4	125.0	127.4
45-49	86.7	89.9	92.5	94.6	97.3	99.8	102.0	104.8	108.4	112.3
50-54	86.0	84.8	83.9	83.5	84.2	86.4	89.9	92.9	95.2	97.9
55-59	77.0	78.8	80.6	82.4	82.8	82.4	80.7	79.6	79.3	80.2
60-64	62.2	65.7	68.4	70.5	71.8	72.4	73.4	74.5	75.5	75.8
65-69	47.9	48.9	50.6	53.0	55.7	58.4	61.4	63.5	65.1	66.1
70-74	31.1	34.0	36.7	39.2	41.4	43.6	44.3	45.7	47.8	50.3
75-79	21.7	22.4	23.5	24.4	25.5	26.8	29.2	31.4	33.4	35.3
80-84	15.9	16.0	16.1	16.4	16.7	17.1	17.6	18.3	19.0	19.8
85-89	10.5	10.6	10.7	10.6	10.5	10.4	10.4	10.4	10.6	10.8
90-99	5.4	5.7	6.0	6.3	6.5	6.6	6.5	6.5	6.5	6.5
100+	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3
Total	1,246.3	1,258.7	1,271.6	1,285.0	1,302.7	1,323.0	1,344.3	1,364.7	1,384.1	1,402.4
Youth (12-18)	80.0	80.8	81.9	83.9	87.0	89.8	92.3	94.0	96.5	98.8
Primary School Age (6-17)	171.1	173.4	177.0	181.1	185.6	190.0	194.1	197.6	200.5	202.4
Working Age (15-65)	880.5	883.2	886.4	890.2	898.7	910.1	923.2	936.2	948.4	959.4
Seniors (65+)	132.6	137.8	143.7	150.1	156.6	163.1	169.6	176.2	182.6	189.1
Super Seniors (85+)	16.0	16.4	16.8	17.1	17.2	17.2	17.2	17.2	17.3	17.5
Female Super Seniors (85+)	10.2	10.4	10.6	10.7	10.8	10.8	10.8	10.8	10.9	11.0

Numbers may not add up due to rounding.

Forecast Tables

Table 5 Calgary Economic Region Population Projections

Calgary Economic Region (thousand persons)		FORECAST								
Completed March 2018	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Total Population (as of April)	1,508.2	1,521.0	1,535.4	1,552.1	1,573.9	1,594.9	1,621.7	1,651.2	1,674.8	1,692.9
Total Population Growth Rate (April - March) %	-	0.9	1.0	1.2	1.5	1.4	1.7	1.9	1.5	1.1
Total Net Migration (April - March)	-	2.1	4.1	6.9	12.6	12.3	18.6	21.6	16.2	11.0
Total Births (April - March)	-	19.8	19.6	19.4	19.2	19.1	19.0	19.1	19.2	19.2
Total Deaths (April - March)	-	9.0	9.3	9.6	10.0	10.4	10.8	11.3	11.7	12.2
Total Natural Increase (April - March)	-	10.8	10.3	9.7	9.2	8.7	8.2	7.8	7.4	7.0
Total Households (as of April)	-	585.0	590.6	597.0	605.3	613.4	623.7	635.1	644.2	651.1
Total Household Formation (April - March)	-	4.9	5.5	6.4	8.4	8.1	10.3	11.3	9.1	6.9
Population by 5-year Cohort (thousands)										
0-4	95.6	96.8	97.4	97.8	97.9	97.7	97.3	97.1	96.9	96.8
5-9	99.9	99.4	98.2	97.0	96.2	95.8	97.1	97.9	98.5	98.7
10-14	88.4	91.0	94.1	97.1	100.0	101.9	102.2	101.8	100.8	99.6
15-19	86.8	85.7	85.7	86.7	88.6	91.2	95.0	99.3	103.1	105.7
20-24	92.7	90.8	89.8	89.7	90.9	92.0	93.1	95.4	97.3	98.6
25-29	115.1	111.2	107.7	104.0	101.0	99.4	100.6	102.7	104.2	105.0
30-34	128.3	127.3	125.2	123.2	122.3	120.4	119.1	118.3	116.3	113.3
35-39	120.7	123.5	126.7	129.5	131.6	132.0	132.9	132.8	132.1	131.2
40-44	113.4	113.9	115.1	117.2	119.8	123.0	127.1	131.7	135.4	137.5
45-49	107.0	109.3	110.8	111.7	113.2	114.2	115.6	117.7	120.3	123.0
50-54	106.6	105.0	103.8	103.2	104.0	106.5	109.2	111.2	112.5	114.0
55-59	101.6	102.9	104.3	105.5	105.6	104.8	103.5	102.5	102.2	103.0
60-64	81.3	86.3	90.4	93.6	96.4	98.7	100.1	101.5	102.8	102.9
65-69	61.5	63.1	65.6	69.2	73.5	77.8	82.7	86.7	89.9	92.5
70-74	39.8	43.6	47.3	50.6	53.9	57.1	58.8	61.3	64.7	68.6
75-79	27.9	28.8	30.3	31.6	33.3	35.3	38.8	42.2	45.2	48.1
80-84	20.8	21.0	21.1	21.5	22.0	22.7	23.7	25.0	26.1	27.4
85-89	13.4	13.7	13.9	14.0	14.1	14.3	14.5	14.7	15.1	15.4
90-99	7.2	7.6	8.1	8.7	9.3	9.8	10.2	10.7	10.9	11.0
100+	0.2	0.2	0.2	0.2	0.3	0.3	0.4	0.5	0.6	0.6
Total	1,508.2	1,521.0	1,535.4	1,552.1	1,573.9	1,594.9	1,621.7	1,651.2	1,674.8	1,692.9

Numbers may not add up due to rounding.

Note: Last year's Calgary Economic Region (CER) population forecast was based upon the last available Federal Census (2011) and annual summary data we receive courtesy of Alberta Health Services. In Alberta, health roll numbers do not allow for providing an over-estimate of population numbers, because after people sign up for Alberta health care when they arrive, they don't cancel their health cards when they leave the province. We were aware of this issue and attempted to make corrections for this in between 2011 and 2017. Accordingly, we have re-calculated our population forecast for the CER based upon the 2016 Federal Census Data. This does not impact any other forecasts or numbers in the Calgary Economic Outlook as they are based upon Labour Force Statistics which Statistics Canada updates monthly.

Forecast Tables

Table 6 Demographic Driven Housing Requests in Calgary by Housing Type

		Forecast Occupied Dwellings in Calgary (as of April in each calendar year)					
		FORECAST					
(Units)	2017	2018	2019	2020	2021	2022	2023
Single Family	272,327	275,509	278,811	282,221	286,432	291,112	295,901
Duplex (per dwelling)	31,977	32,272	32,574	32,886	33,312	33,806	34,323
Apt. / Condo units	98,965	99,448	99,942	100,461	101,479	102,824	104,343
Townhouse / multi	50,451	50,819	51,192	51,577	52,166	52,883	53,641
Conversion	13,206	13,204	13,203	13,209	13,297	13,434	13,591
Other (institutions)	4,250	4,291	4,344	4,404	4,481	4,574	4,696
Total	471,176	475,542	480,066	484,759	491,168	498,633	506,495
		Demand for Completions of New Housing Construction (as of April in each calendar year)					
		2018	2019	2020	2021	2022	2023
Single Family		3,182	3,302	3,411	4,211	4,679	4,790
Duplex (per dwelling)		295	303	312	426	495	517
Apt. / Condo units		0	0	0	0	0	0
Townhouse / multi		368	373	385	589	717	758
Conversion		0	0	3	87	137	157
Other (institutions)		41	54	60	77	93	122
Total		3,885	4,031	4,171	5,391	6,120	6,343

Note: Apt. /Condo forecast based on market needs presuming a normal 5% vacancy rate. Please see Textbox 1 for full explanation and analysis.

Table 7 Demographic Driven New Housing Requests in Calgary Economic Region by Housing Type

		Forecast Occupied Dwellings in CER (as of April in each calendar year)					
		FORECAST					
(Units)	2017	2018	2019	2020	2021	2022	2023
Single Family	334,824	338,023	341,574	345,609	350,681	355,561	361,476
Duplex (per dwelling)	35,817	36,108	36,430	36,802	37,292	37,759	38,369
Apt. / Condo units	112,871	113,522	114,260	115,164	116,542	117,896	119,919
Townhouse / multi	56,287	56,632	57,015	57,473	58,125	58,746	59,606
Conversion	22,674	22,677	22,695	22,750	22,905	23,048	23,312
Other (institutions)	4,870	4,929	5,008	5,105	5,232	5,370	5,558
Total	567,343	571,891	576,982	582,903	590,777	598,381	608,241
		Demand for Completions of New Housing Construction (as of April in each calendar year)					
		2018	2019	2020	2021	2022	2023
Single Family		3,199	3,551	4,035	5,072	4,880	5,915
Duplex (per dwelling)		291	322	372	490	468	610
Apt. / Condo units		651	738	904	1,378	1,355	2,023
Townhouse / multi		345	383	458	652	621	860
Conversion		3	18	55	155	143	264
Other (institutions)		59	80	96	127	138	188
Total		4,548	5,091	5,920	7,874	7,604	9,860

Forecast Tables

Table 8 Demand for Completions of New Housing Construction in the CER but outside Calgary

Forecast Occupied Dwellings in CER (as of April in each calendar year)						
FORECAST						
(Units)	2018	2019	2020	2021	2022	2023
Single Family	17	249	625	861	201	1,125
Duplex (per dwelling)	0	16	60	64	0	66
Appt/Condo units	651	738	904	1,378	1,355	2,023
Townhouse / multi	0	0	60	63	0	7
Conversion	3	18	52	68	6	107
Other (institutions)	18	26	36	50	45	66
Total outside the City	663	1,061	1,749	2,483	1,484	3,517
Total inside the City	3,885	4,031	4,171	5,391	6,120	6,343

Note: This is relevant comparison data from Table 6 Demand for Completions of New Housing Construction inside the city of Calgary .

Table 9 Demographic Driven Housing Demand by Housing Type - Summary

Type of Demand	Region	City	City Share
2019-2022 Single Family	17,538	15,603	89%
2019-2022 Duplex	1,651	1,535	93%
2019-2022 Townhouse	2,114	2,064	98%
2019-2022 Apt/Condo	4,374	0	0%
2019-2022 Other	441	284	64%
Net Demand	26,490	19,713	74%



Glossary

AECO C

- ▶ Is the central natural gas spot market price for Alberta, measured in CAN\$ per gigajoule. Joule is the international measure of energy. One gigajoule corresponds to one billion joules.

Advanced economies

- ▶ Currently composed of 31 developed countries: Australia, Austria, Belgium, Canada, Cyprus, Denmark, Finland, France, Germany, Greece, Hong Kong SAR, Iceland, Ireland, Israel, Italy, Japan, Korea, Luxembourg, Malta, Netherlands, New Zealand, Norway, Portugal, Singapore, Slovenia, Spain, Sweden, Switzerland, Taiwan Province of China, United Kingdom and the United States.

Aggregate demand

- ▶ The sum of consumer, government and business spending and net exports.

Baby-Boomer Generation (BBG)

- ▶ Those born between January 1st 1946 and December 31st 1964.

Calgary Economic Region (CER)

- ▶ See Economic region.

Census metropolitan area (CMA)

- ▶ Urban Census metropolitan area (CMA) is an area consisting of one or more neighbouring municipalities situated around a major urban core. A CMA must have a total population of at least 100,000 of which 50,000 or more live in the urban core.

Commodities

- ▶ Goods usually produced and/or sold by many different companies. It is uniform in quality between companies that produce/sell it in the sense that we cannot tell the difference between one firm's product and another. Examples of commodities include oil, electricity, metals, cement and agricultural products, such as wheat, corn, rice.

Consumer price index (CPI)

- ▶ The Consumer Price Index (CPI) is an indicator of the consumer prices encountered by consumers. It is obtained by calculating, on a monthly basis, the cost of a fixed "basket" of goods purchased by a typical consumer during a given month. The basket contains products from various categories, including shelter, food, entertainment, fuel and transportation. Since the contents of the basket remain constant in terms of quantity and quality, the changes in the index reflect price changes. The CPI is a widely used indicator of inflation (or deflation) and indicates the changing purchasing power of money in Canada.

Core inflation rate

- ▶ Rate of inflation in the Consumer Price Index excluding food and energy.

CUSFA

- ▶ The Canada- U.S. Free Trade Agreement from 1988

Economic region

- ▶ The area generally correspondent to a region used by the province for administrative and statistical purposes.

Economy

- ▶ The term economy refers to the institutional structures, rules and arrangements by which people and society choose to employ scarce productive resources that have alternative uses in order to produce various goods over time and to distribute them for consumption, now and in the future, among various people and groups in society. In a free market economy like Canada's the laws of supply and demand determine what, how and where goods and services should be produced, who should consume them and when. A "strong" or "healthy" economy is usually one that is growing at a good pace.



Glossary

Employment rate

- ▶ The number of employed persons expressed as a percentage of the working age population.

Euro zone

- ▶ Denomination given to the European Union members that adopt the Euro as their currency. As of 2007 there were 15 countries in the Euro Area: Belgium, Germany, Ireland, Greece, Spain, France, Italy, Cyprus, Luxembourg, Malta, The Netherlands, Austria, Portugal, Slovenia and Finland.

European Union (EU)

- ▶ Composed of 28 countries: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland, Portugal, Slovak Republic, Slovenia, Spain, Sweden, Romania, and United Kingdom.

Emerging economies

- ▶ This is a reference to countries that, due to growth performance, are considered in transition between developing and developed countries. The most important emerging economies are Brazil, China, India and Russia, sometimes referred to as BRIC.

Fiscal policy

- ▶ Also called budgetary policy, the overall program for directing government spending and taxation for the purpose of keeping the actual Gross Domestic Product (GDP) close to the potential full employment GDP, but without overreaching that potential and causing inflation.

Fixed exchange rate

- ▶ Sometimes called a pegged exchange rate, is a type of exchange rate regime wherein a currency's value is matched to the value of another single currency or to a basket of other currencies, or to another measure of value, such as gold.

Goods-producing industry

- ▶ Includes agriculture, forestry, fishing, mining, oil and gas extraction, utilities (electric, gas and power), construction and manufacturing.

Gross domestic product (GDP)

- ▶ GDP is a measure of the value of all goods and services produced by the economy. Unlike Gross National Product (GNP), GDP only includes the values of goods and services earned by a region or nation within its boundaries.

Home market value

- ▶ An indicator to compare houses across the country. This indicator is based on an 1,800 sq. ft., seven-room, three-bedroom, two-bath home in a suburban community where middle income Canadian families of four reside.

Housing markets

- ▶ Consists of two markets: new house and re-sale markets referred to as MLS (Multiple Listing Service). Each is described by different parameters and followed closely by different statistical bodies: the Planning and Building Department with The City of Calgary and Statistics Canada for new houses, and The Canadian Real Estate Association for the re-sale market.

Housing units

- ▶ A general term that refers to single-family houses, townhouses, mobile homes and/or condominiums.

Index

- ▶ An economic tool that allows for data comparison over time. An index number is used to indicate change in magnitude (cost or price) as compared with the magnitude at some specified time.



Glossary

Inflation rate

- ▶ A measure of the percentage change in the Consumer Price Index for a specific period of time.

In-migrants

- ▶ Persons currently living within a census metropolitan area (CMA), that five years earlier lived elsewhere in Canada or abroad.

Labour force

- ▶ The working age population, which includes employed and unemployed people.

Labour force participation rate

- ▶ The participation rate refers to the number of people who are either employed or are actively looking for work. It is the ratio between the labour force and the working age population.

Major advanced economies (G7)

- ▶ Composed of seven countries: Canada, France, Germany, Italy, Japan, United Kingdom, and the United States

Migrants

- ▶ Persons who lived in a different census subdivision (CSD) than the one they lived in five years earlier (internal migrants) or who lived outside Canada (external migrants or immigrants).

Monetary policy

- ▶ Refers to government measures undertaken to affect financial markets and credit conditions with the ultimate objective of influencing the overall behaviour of the economy. Monetary policy is usually the responsibility of the central banks, such as the Bank of Canada.

Non-accelerating inflation rate of unemployment (NAIRU)

- ▶ This is the rate of unemployment consistent with an economy that is growing at its long-term potential so there is no upward or downward pres-

sure on inflation. It changes over time primarily because of demographic shifts and technological advancements.

OECD

- ▶ It is the acronym for Organization of Economic Cooperation and Development. It currently has 30 members, all from developed economies in Europe, North America, Asia and Oceania. It was created in 1961 and aims to foster prosperity and fight poverty through economic growth and financial stability.

OPEC

- ▶ Organization of Petroleum Exporting Countries. It has 12 country members; Algeria, Angola, Ecuador, Iran, Iraq, Kuwait, Libya, Nigeria, Qatar, Saudi Arabia, the United Arab Emirates, and Venezuela.

Recession

- ▶ A period in which the economy experiences two consecutive quarters of gross domestic product decreases. During this temporary period there is a decline in industrial production and trade.

Transatlantic Trade and Investment Partnership

- ▶ A proposed trade agreement between the European Union and the United States, with the aim of promoting trade and multilateral economic growth. TTIP is considered by the US a companion agreement to the Trans-Pacific Partnership (TPP).

Trans-Pacific Partnership (TPP)

- ▶ A trade agreement between Australia, Brunei, Canada, Chile, Japan, Malaysia, Mexico, New Zealand, Peru, Singapore and Vietnam signed on 4 February 2016. The agreement was not ratified and after the USA withdrew its signature in January 2017, it cannot take effect. In January 2017.



Who We Are

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Clyde has a B.A. in Economics (1992), M.A. in Economics (1995), a LL.B. (2003) and was called to the Alberta Bar in 2004. Clyde has completed 20 years with the City of Calgary. Over that time he has worked in several departments on a multitude of projects. Clyde's current research interests includes population forecasting, housing analysis and dynamic simulations. When he is away from his desk you might find him hiking, skiing or riding his motorbike.

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Ivy joined The City as an economist in 2005, after working as an engineer and then a marketing manager in Beijing. She specializes in municipal finance, forecasting, energy market analysis, and labour economics. Ivy's report "A Case of Fiscal Imbalance: The Calgary Experience" studied the fiscal imbalance between the local government and the provincial or federal government. In 2011, she presented her findings at the Fiscal Issues Session of the 45th Annual Conference of the Canadian Economic Association in Ottawa. Ivy has a B.Sc. in physics, a MBA in marketing, and a M.A. in Economics.

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Wendy currently focuses on financial and public policy analysis, economic modelling and consulting, and econometric and statistical analysis. Wendy has provided analytical assistance to various City business units including the City Manager's Office, Law Department, Community Services, Corporate Financial Reporting and many other business units, as well as external stakeholders such as Calgary Economic Development and Calgary Parking Authority. Wendy also provides monthly economic monitoring reports of Calgary and Alberta's economy. Wendy has a B.A. in Insurance and Actuarial Science, M.A. in Economics, and studied in the Ph.D. program in Economics.



Who We Are

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Chukwudi's current areas of interest include urban and regional planning, econometric modeling, nonparametric and wavelet applications, and public policy. Chukwudi started lecturing in 1992 in Statistics and Econometrics, while completing his master's program in Economics at the University of Windsor, Ontario in 1993. He started his Ph.D. at University of Western Ontario and completed it at Wayne State University in Detroit Michigan in 2001. He was a visiting lecturer at University of Michigan-Dearborn, an adjunct professor at Lawrence Technological University in Southfield Michigan, lectured at Wayne State University in Detroit Michigan and Imo State University, Imo State Nigeria, and worked as an Econometrician for Power Information Network an affiliate of JD Powers and Associates in Troy Michigan. Chukwudi holds a B.Sc. degree with a major in Physics (1991) from University of Windsor. Chukwudi enjoys spending lots of time with his four children, and working on his automobiles whenever he is chanced.

Jorjeta Bojanova

Corporate Research Analyst

Jorjeta's is interested in data management and analysis and is involved in several research projects and reports while managing the databases for the team. Her interest in macroeconomics is closely linked to her background. Jorjeta holds a B.A. and M.A. in Political Science from Free University Berlin and studied in the Ph.D. program there with specialization on the EU and its primary law. Jorjeta holds also a Master's degree in German Linguistics from State University Sofia and received the German DAAD scholarship in Psycholinguistics. Priorly, Jorjeta worked as professor, researcher, parliamentarian assistant and analyst for both the government and the business. Just as she is passionate about her work, so she is about arts and fencing.

Corporate Economics provides services in four areas: forecasting, information provision, policy analysis and consulting. We also monitor the current economic trends which allows us to develop unique insights on how external events are impacting the local economy and the Municipal government. We are experienced at researching different economic topics and have developed reliable methods of forecasting and analysis.

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Forecast

Forecast Tables
Table 1 Selected Economic Indicators

Indicator	Historical		Forecast	
	2016	2017	2018	2019
Calgary Region				
GDP (Billions)	11.3	11.7	12.1	12.5
Population (Millions)	1.3	1.4	1.4	1.4
Unemployment Rate (%)	7.2	7.0	6.8	6.6
Household Income (Thousands)	28.5	29.0	29.5	30.0
Home Sales (Thousands)	18.5	19.0	19.5	20.0
Construction Spending (Billions)	1.5	1.6	1.7	1.8
Real Estate Market				
Home Sales (Thousands)	18.5	19.0	19.5	20.0
Home Sales Price (Thousands)	285	290	295	300
Home Sales Volume (Millions)	5.3	5.5	5.7	6.0
Home Sales Inventory (Months)	3.5	3.5	3.5	3.5
Home Sales New Listings (Thousands)	1.5	1.6	1.7	1.8
Home Sales New Listings Price (Thousands)	285	290	295	300
Home Sales New Listings Volume (Millions)	4.3	4.5	4.7	5.0
Home Sales New Listings Inventory (Months)	3.5	3.5	3.5	3.5
Home Sales New Listings Price per Square Foot (Dollars)	125	125	125	125
Home Sales New Listings Price per Square Foot (Thousands)	125	125	125	125

- ▶ Calgary & Region Economic Outlook
- ▶ Energy Reports on Natural Gas and Crude Oil

Information Provision



- ▶ Labour Market Review
- ▶ Inflation Review
- ▶ Current Economic Analysis
- ▶ Housing Review

Policy Analysis



- ▶ A Case of Fiscal Imbalance: The Calgary Experience
- ▶ Diesel Fuel Price Pass-Through Calgary
- ▶ Calgary Residential and Commercial Real Estate Market

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Sources:

Statistics Canada, CMHC, CREA, CREB, Bank of Canada, Conference Board of Canada, GLJ Energy Publications, The City of Calgary, Centre for Spatial Economics (C4SE), U.S. Federal Bank Reserve of St. Louis (FRED), U.S. Energy Information Administration (EIA), International Money Fund (World Economy Outlook), and others.