

The background of the slide is a photograph of the Bank of Canada building at night. The building is a large, modern structure with a prominent glass facade that reflects the city lights and the sky. The building's architecture is a mix of traditional stone and modern glass. The sky is a deep blue, and the city lights are visible in the background. The text is overlaid on a semi-transparent dark blue band across the middle of the image.

# Bank of Canada Governor's Challenge

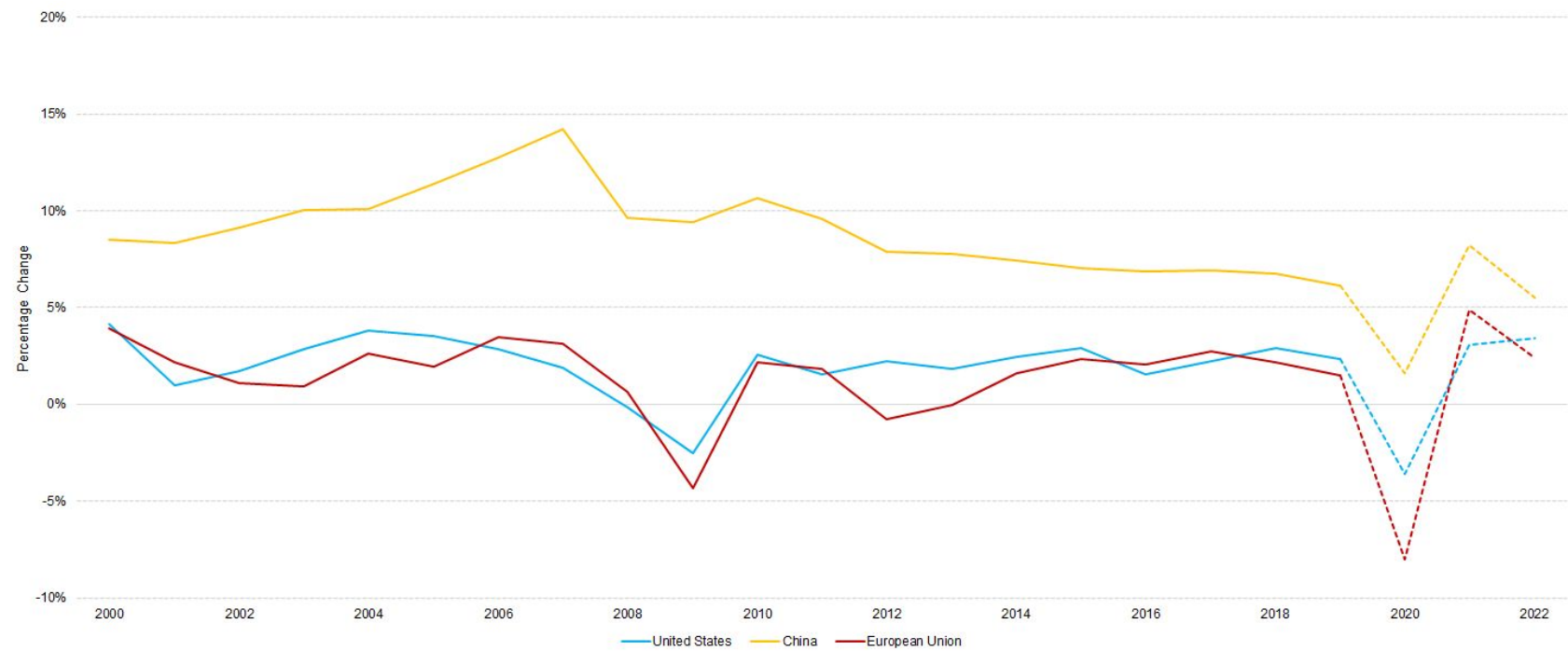
*Presentation for The Bank of Canada*

Gabrielle Carelli, Walter Muiruri, Shivam Tandon, Zhendao Tsai

November 18, 2020

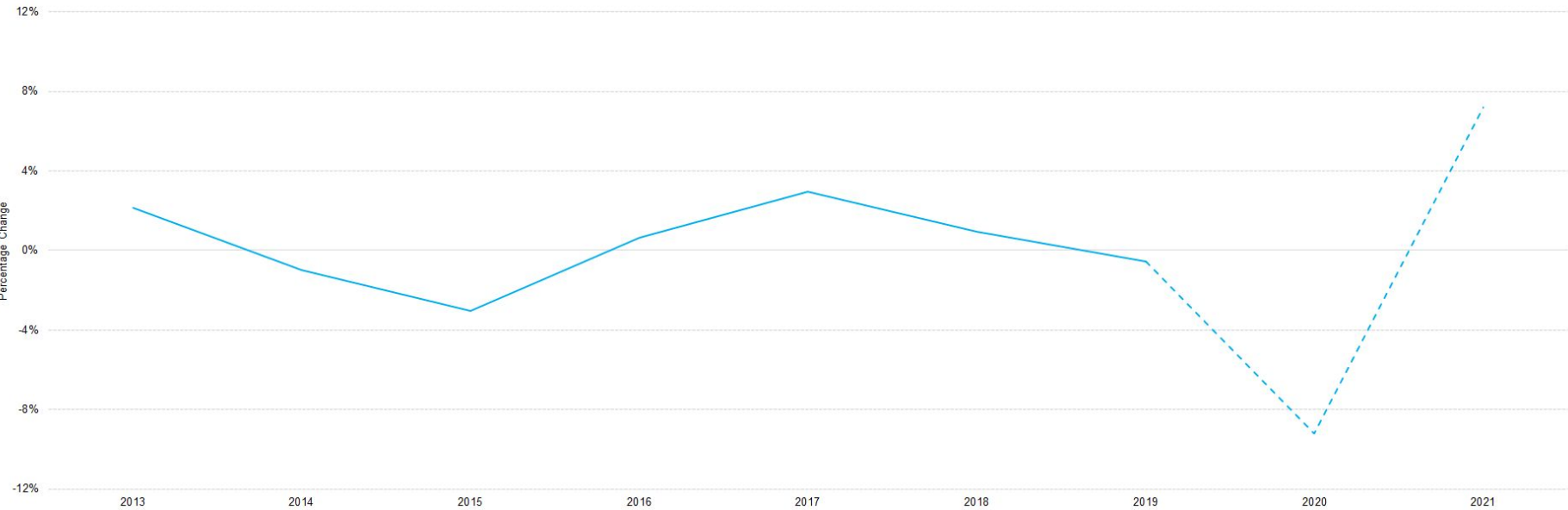
# World Economic Outlook

## ANNUAL GDP GROWTH RATE



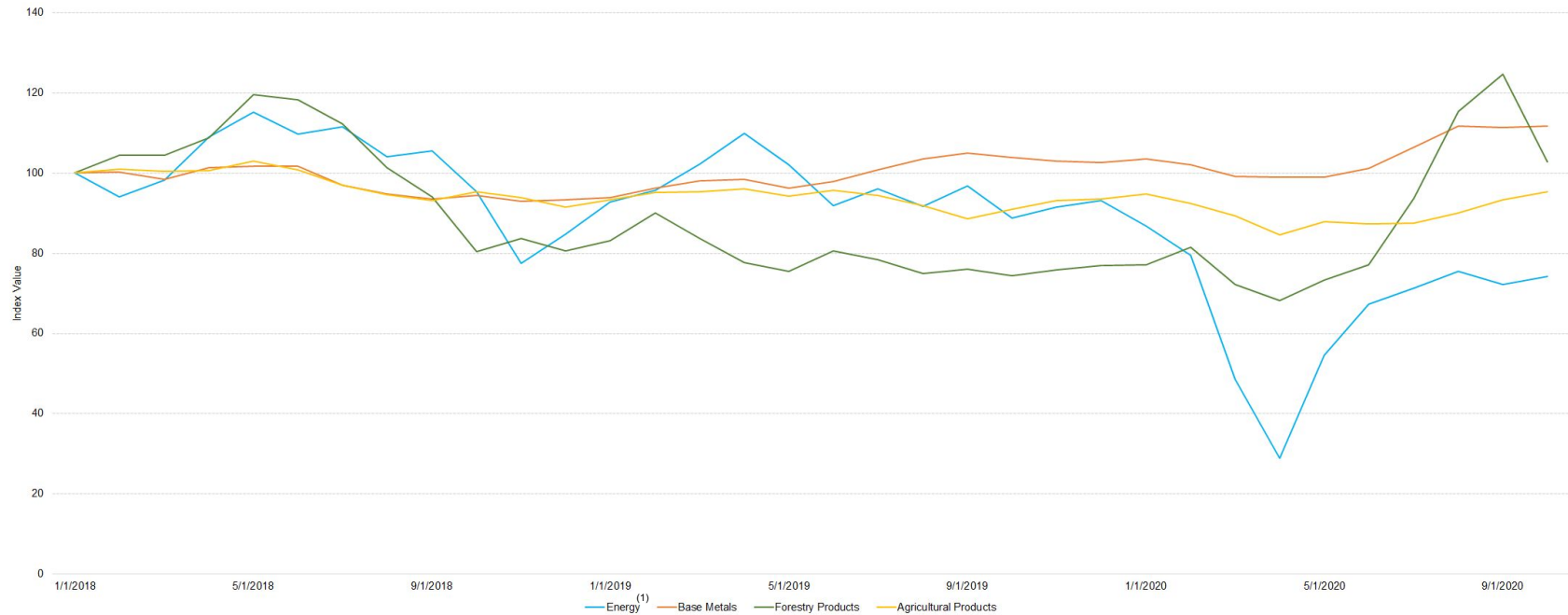
# World Economic Outlook

GLOBAL TOTAL MERCHANDISE EXPORTS - (Y/Y GROWTH)



# World Economic Outlook

## BANK OF CANADA COMMODITY PRICE INDICES - (01/01/2018 = 100)

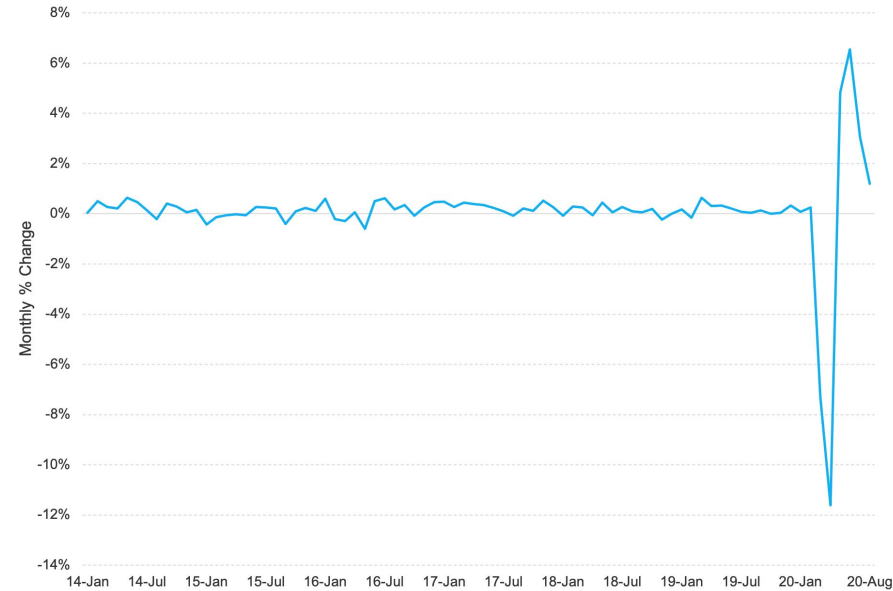


Source: Bank of Canada

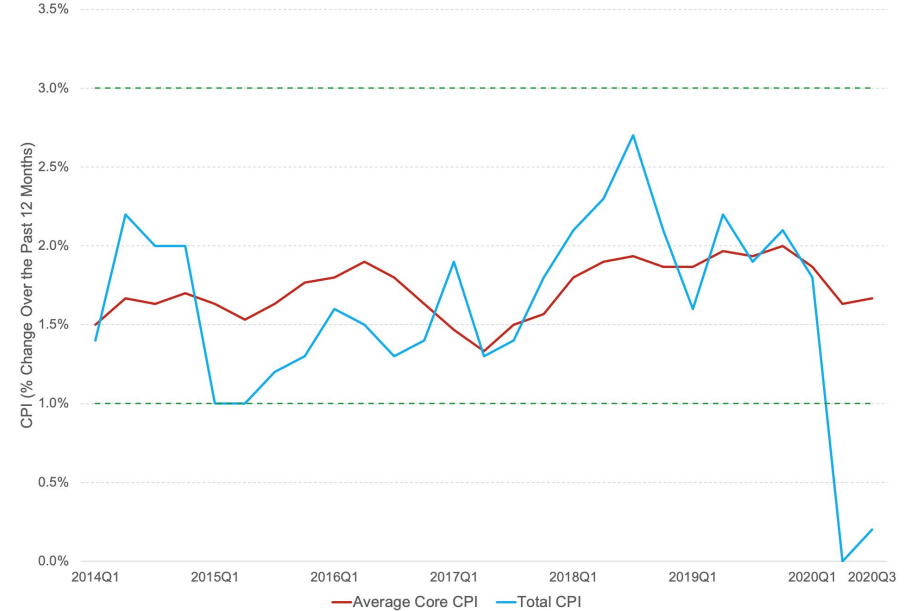
1. Energy Includes: Coal, Oil [West Texas Intermediate front month futures, Brent front month futures, front month futures of Net Energy Canadian Heavy Crude Oil index], and Natural Gas

# The Canadian Economy

REAL GDP GROWTH - (MONTHLY % CHANGE, CHAINED 2012)



CPI INFLATION - (% CHANGE OVER THE PAST 12 MONTHS)





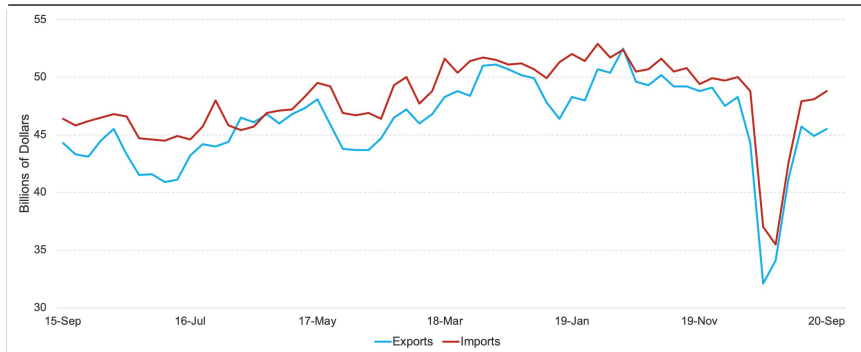
# The Canadian Economy

## EMPLOYMENT GROWTH RATES - HETEROGENEOUS RECOVERY

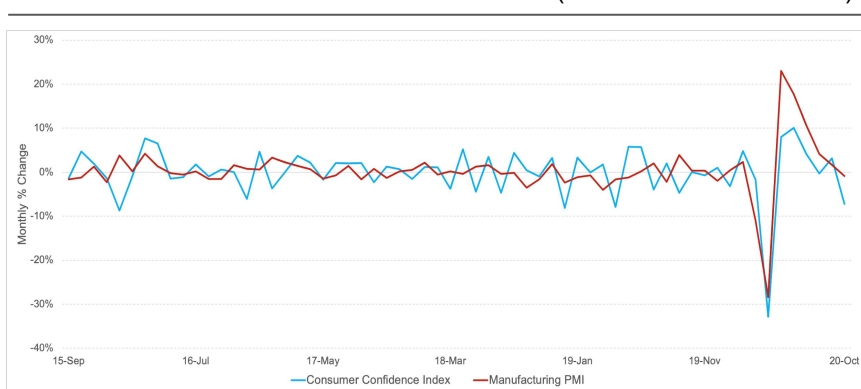


# The Canadian Economy

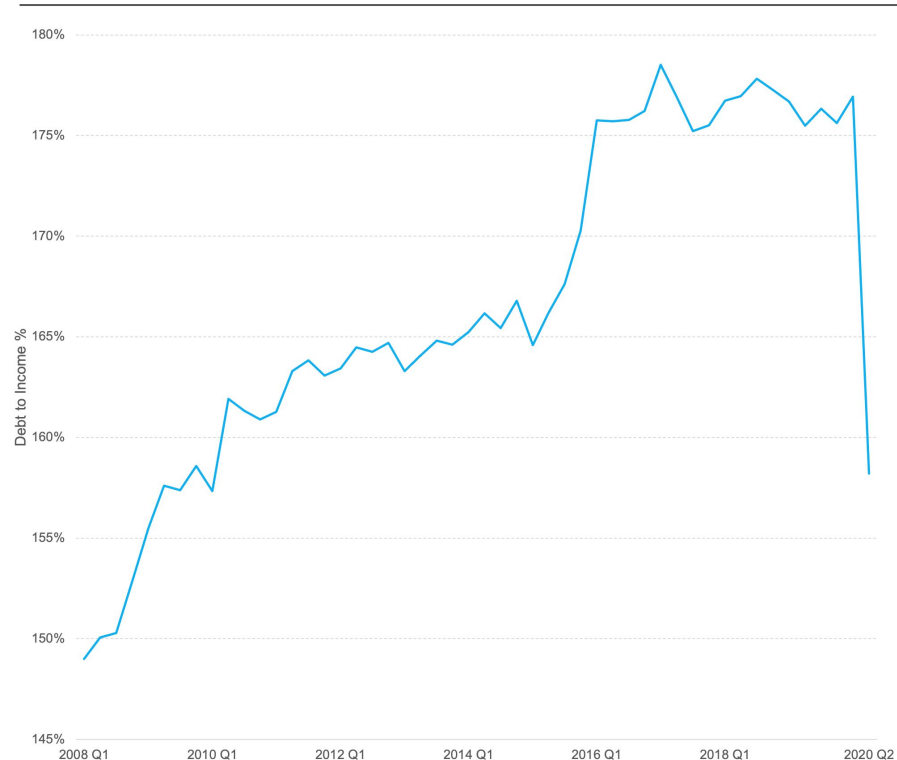
## INTERNATIONAL TRADE - BILLIONS OF DOLLARS



## CONSUMER CONFIDENCE INDEX & PMI - (MONTHLY % CHANGE)



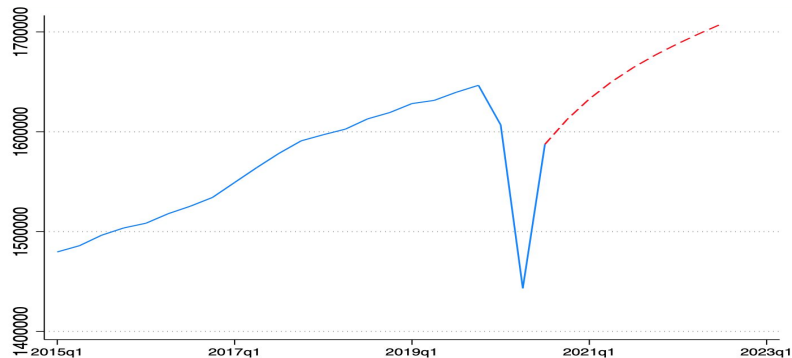
## HOUSEHOLD DEBT - DEBT TO INCOME %



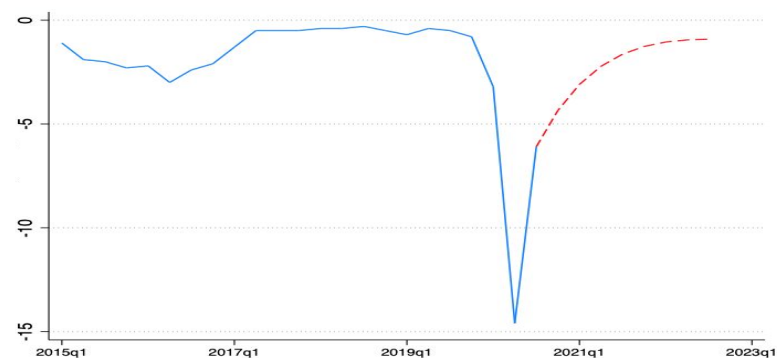
Source: Statistics Canada, Ipsos, CBC, Bloomberg, RBC

# Canada - VAR Economic Model Forecast

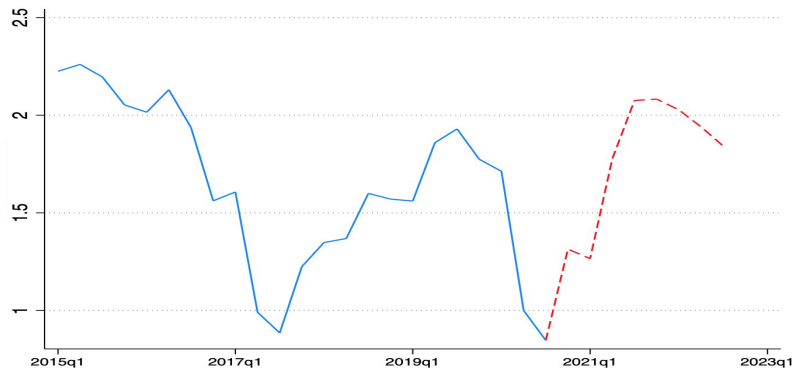
REAL GDP (EXPENDITURE-BASED, CHAINED 2007)



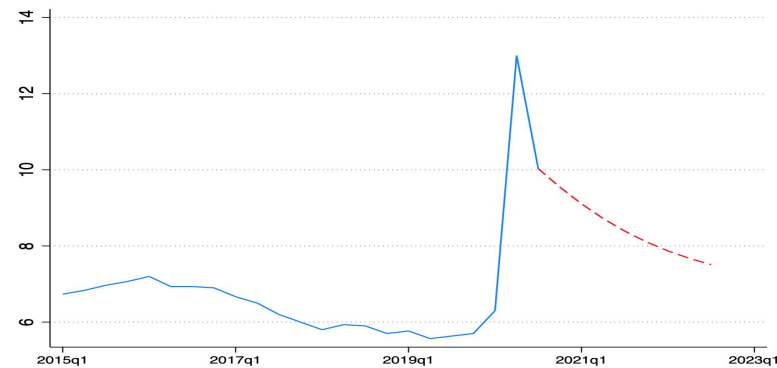
OUTPUT GAP (INTEGRATED FRAMEWORK)



INFLATION RATE (Y/Y % CHANGE IN CPI, BASE YEAR = 2002)



UNEMPLOYMENT RATE: AGED 15 AND OVER

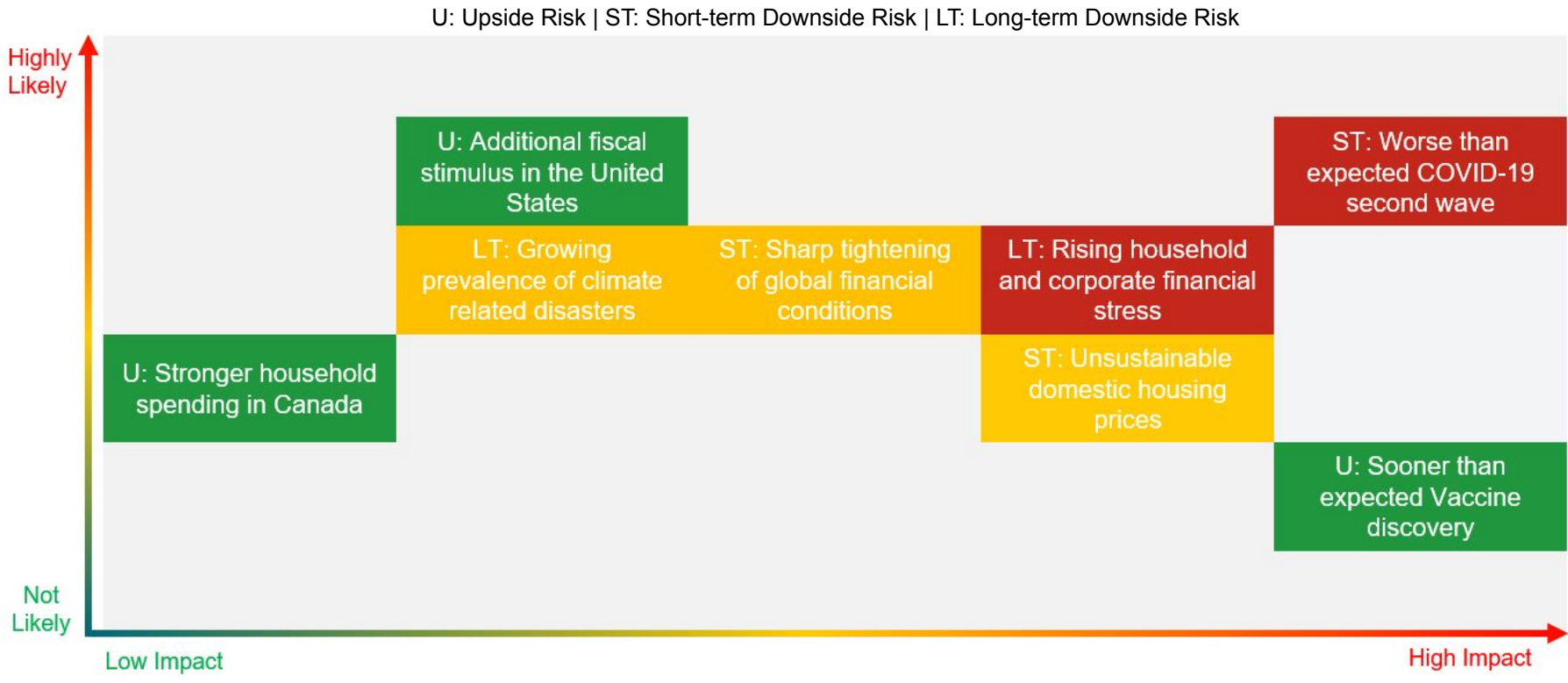


Source: Statistics Canada, Bank of Canada, Federal Reserve Bank of St. Louis  
Model variables included in Appendix



# Outlook Risks

## SUMMARY MATRIX



Source: Statistics Canada, Bank of Canada, Federal Reserve Bank of St. Louis, RBC Global Asset Management, US Bureau of Economic Analysis

# Policy Recommendation for December 9th announcement

We suggest that the Bank of Canada maintain a target policy rate of 0.25%

## FORWARD GUIDANCE

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- We recommend that the Bank of Canada **provide state contingent forward guidance** for the **target policy rate**
  - **Conditional on the outlook for inflation**
- **Extension of their current forward guidance**
  - **Communicate to a larger audience** through social media or means similar to the Bank's Economy, *Plain and Simple Blog*, to **spur confidence**
  - **More frequent and regular updates to help improve transparency**

## ASSET PURCHASE PROGRAMS AND LONG TERM INTEREST RATE CAP

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- We recommend a **continuation** of the **outstanding Credit and Quantitative Easing Programs**
  - **Continue** Government of Canada Bond **purchases of at least \$4 billion per week**
  - We also suggest **purchasing 5-year government bonds**

## INFLATION TARGETING

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- We recommend a **continuation of the 2% inflation target**
  - Should **aim to modestly overshoot target**
- In the renewal of its next agreement with Finance, the Bank should **advocate to extend the average inflation period to two years**
  - To help **Anchor long term expectations**

# Appendix - Standard Question

## GOAL VS INSTRUMENT INDEPENDENCE

- We know the Bank of Canada is not **goal independent** but is **instrument independent**.

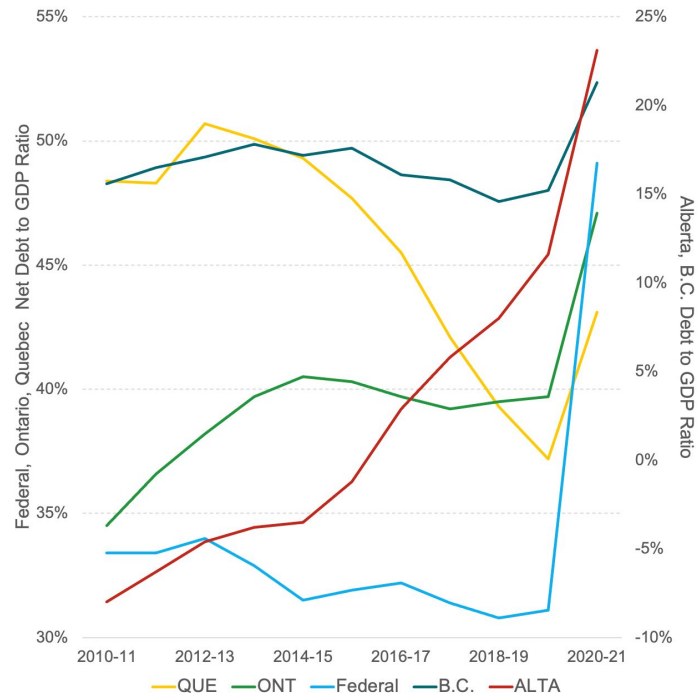
## ADJUSTING TARGET POLICY RATE

- Adjusting the target policy rate is the conventional policy for the Bank of Canada to reach its inflation target.
- In the long run we assume there will be inflationary pressures, and the main question is: How will the Bank of Canada respond to rising inflation, will interest rates increase or be kept artificially low?
- Keeping interest rates artificially low in order for government debt to be kept low will lead to a threat to instrument independence, as the Bank will be limited on what tools it has to reach its inflation target.

## BALANCE SHEET

- Sharp increase of the Bank of Canada's balance sheet.
- Purchase of provincial government bonds. Will the Bank of Canada be pressured to keep financing provincial governments?

## FEDERAL & PROVINCIAL DEBT PER CENT OF GDP



Source: Statistics Canada, RBC Economics (Values from 2019-20, and 2020-21 are projection values), C.D. Howe Institute

# Appendix - VAR Model

## Model

$$Y_t = \delta + \Theta Y_{t-1} + \dots + \Theta_p Y_{t-p} + \varepsilon_t$$

(Vector notation)

## Model Variables

- Overnight Target interest rate
- Output Gap
  - Integrated Framework
- Canadian Unemployment rate
  - Aged 15 and Older
- Consumer Price Index
  - All Items
  - Base Year = 2002
- Canada Real Gross Domestic Product
  - Consumption Based
  - Chained 2007
- Effective Federal Funds Rate
- U.S. Gross Domestic Product
- U.S. Unemployment